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LIFE, MIND, AND SPIRIT

LIFE, MIND, AND SPIRIT

BEING THE SECOND COURSE OF

THE GIFFORD LECTURES

DELIVERED IN THE UNIVERSITY OF ST ANDREWS IN THE YEAR 1923 UNDER THE GENERAL TITLE OF

EMERGENT EVOLUTION

BY

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PREFACE

WHATEVER may have been the accepted meaning or meanings of the word "Evolution" prior to the middle of last century, Herbert Spencer in the course of the next decade or so set folk thinking afresh around the word and the concept he sought to embody in it—that of progress. Apart from questionable manner of statement in general form, apart from positive evidence in detail too obviously selected, here, at the heart of the matter, was a concept firmly contrasted and not confused with that of "dissolution," that, as he claimed, was applicable to all progress in cosmogony in the transmutation of species according to "the development hypothesis" in the conduct of men in social communities.

It met, and still meets, with strenuous and often bitter opposition. And why? Not so much in regard to what it asserted, as in regard to what it denied—in the phrase, for example, "not by *manufacture* but by *evolution*." For the great majority of interested persons the head and front of Spencer's offending was in this negation, though there was sting also in the positive assertion that "creation by manufacture is a much lower thing than creation by evolution" (1858). Is it surprising that there were many who said, that there are some who still say:

The effect of this on religion must be disastrous. But what does the Rev. J. M. Wilson, Canon of Worcester, speaking for religion, now say? He says: "The discovery that the method of creation has been that of evolution should be regarded as a revelation to man of the Being and the working of God" (*Evolution in the Light of Modern Knowledge*, Aug. 1925, p. 512).

This may not have been Herbert Spencer's belief. Into that question I do not enter. It is substantially my belief as expressed in the concluding lecture. To express it as best I can falls within Lord Gifford's injunction to the lecturers under his trust.

"Evolution not manufacture." That surely can mean naught else than "natural not supernatural." In a sense that is so. But is there not a sense in which the antithesis is becoming for many religious persons out of date? The sense in which it is so implies radically disparate dualism. Hence it may be said: This or that for which a natural origin can be assigned is not supernatural; but whatsoever must be attributed to supernatural origination is not natural. Hence there can be nothing but questionable analogy to link modes of becoming in realms so diverse. In man himself there is the life of the body to which a natural origin may perhaps be assigned. But there is also the indwelling spirit that has entered into the possession of the body. This belongs to the quite other realm of spiritual beings. Of free origination in this realm one can only say that it is not natural but supernatural.

What else, then, can one say? Without committing him to more than is here set down, one may

say with Dean Inge: "It may be a long time yet before it is realised that any philosophical or religious theory which separates man from nature—which draws an impassable line anywhere across the field of experience, whether the line be drawn at self-consciousness or consciousness or anywhere else—is untenable" (*Personal Idealism and Mysticism*, p. 146, *cf.* p. 82). One may say with Canon Wilson: "It has been the universal assumption in the past that there were two separate spheres of existence, and that these were wholly distinct in kind. They were regarded respectively as natural and 'supernatural.' Exceptional occurrences in the natural were to be explained as caused by an irruption of the supernatural into the natural. . . . But now the human mind . . . is rejecting the whole conception of this irruption of one sphere into the other. It identifies in kind what we have called the supernatural with the natural. It makes the spiritual and the natural continuous, and equally divine . . . not by denying or degrading the supernatural, but by raising the natural into entire continuity with it" (*Op. cit.*, pp. 502–3).

Let me, however, lest I should implicate others in a form of belief to which they do not fully subscribe, state my own conclusion in my own way. I put it thus: There is no disjunctive antithesis of evolutionary progress and Divine purpose. The question: Is there one *or* the other? has no meaning if there always be one *with* the other.

My chief concern is to present the point of view of one who accepts both. How stands the matter, then, in the light of emergent evolution?

There is, I submit, an intelligible sense in which it may be said that, in the ascending hierarchy of stages of progress, regarded as manifestations of Divine Purpose, each higher stage is in turn *super*natural to that which precedes it. In this sense life is supernatural to the inorganic; reflective comprehension in thought is supernatural to naïve unreflective perception; the religious attitude, with acknowledgment of Divine Purpose, is supernatural to the ethical attitude in social affairs. For those who reach this highest stage, as they deem it, the religious attitude affords the supreme exemplar of the supernatural. It is distinctive of the spiritual man. The ethical value of what the right-minded social person speaks of as "playing the game" is not lost; the spiritual value of doing so in accordance with Divine Purpose, or "in God's sight," is gained. It is this that is distinctive of the religious attitude as emergent in some persons.

But each supernatural in this sense, when it comes in due course, is a new and emergently higher character or quality of the natural—a further manifestation of the substantial unity of Divine Purpose. Within that unity all that is natural in evolutionary process of becoming is viewed in the supernatural attitude of a spiritual person as one with and not other than the "Working of God." The stress for us is on a new *attitude*, for it is this that is, as I think, emergent. Hence we may speak of a new "vision," and a new "heart," capable of a higher and richer form of joy.

The concept of Divine Purpose as timeless and omnipresent in substantial unity, but none the less

manifested, and diversely manifested, at every here and now, is regarded by many religious persons as savouring too much of mysticism to meet the requirements of daily affairs. But, on the other hand, there are also religious persons who regard the alternative concept of a disparate realm of discarnate spirits as savouring too much of the mythical to meet the requirements of what, for them, is the deeper import of a spiritual attitude.

Now the realm of discarnate spirits is, for those who accept it, a distinctively supernatural realm. May one distinguish *this* concept of the supernatural as that which has its roots in primitive mythology? In suggesting this one discloses one's personal bias. But why not, if it be the bias of honest conviction. My concept of the spiritual is avowedly monistic to the core. Mythology is avowedly pluralistic in a disparate realm of being.

There is no denying its widespread acceptance in a more or less modified form. For us, then, such questions arise as (1) How should we interpret its natural origin? (2) What relation has it to what we have been led to regard as a spiritual attitude? These come down to historical questions. Pending the verdict of history, it is at least open to us to surmise, as a matter of opinion based on some inquiry, that mythology had its origin in the exuberant creative imagination of primitive man; and that its later refinement is traceable to the no less creative artistry of the poet in the old-time sense of "maker," that is, in Ben Jonson's words, of one who "feigneth and maketh a fable and writes things like the truth."

If this should be so, mythology is a creative product of the human mind, the outcome of feigning and fable—fable so real to the imagination as to be mistaken for acknowledged reality, even when criticism has entered on its task. Has it come down through the ages because primitive folk and some of their successors have deemed it so " like the truth " as hardly to be distinguishable therefrom ? Have the great poets taught us to substitute for " like the truth " *symbolic* " of the truth ? " Must we still take literally the pluralism of spiritist mythology ? May we not pass beyond all mythology and, even if it savour of mysticism, acknowledge the substantial unity of Divine Purpose in a realm of reality, one and indivisible ? These and the like are large questions here necessarily condensed in brief. I revert to a " may be." It may be that, in religious regard, mythology—and all that is supernatural in *that* sense —is the chaff to be winnowed from the pure grain of the teaching of Christianity.

Even so it may be that primitive mythology and its later refinements have had their due place in the progressive development of a monistic spiritual attitude. It is surely permissible, with the Biblical record before us, to regard the acceptance of supernatural mythology as a passing stage in the orderly unfolding of Divine Purpose. It may be that what for primitive and some later folk was a complex and elaborate drama, enacted on a stage that they peopled with fabulous spirits and alien gods, had first to be made and then unmade in order that a purified vision of one God might be reached through deeper spiritual insight.

And here emergent evolution has a suggestion to offer. If, as I shall have occasion to urge (p. 289), some measure of dissolution *at a lower level of emergence* be contributory to evolution *at a higher level*, it may well be that dissolution of the earlier mythological interpretation of current events has been contributory to the progressive evolution of that spiritual attitude towards Divine Purpose which, as I think, is emergent in religious persons throughout the ages of recorded human history.

Be this as it may, if we seek to face the facts of our world, we have to reckon with dissolution no less than with evolution—with regress no less than with progress. This opens up a difficult problem. I do not attempt to grapple with it. We must accept what we find. I find evolution ; and I find dissolution also. But may I not *select evolution as my theme* and deal only with lower-level dissolution in so far as it is contributory to higher-level evolution ? And may I not try to show in what way all evolutionary progress may be regarded as a manifestation and revelation (one must use some such words) of Divine Purpose ?

In order of exposition I treat first of emergent evolution and allied concepts before passing on to express the grounds of my belief in Divine Purpose. I do so because, as I think, the former, when it shall be more adequately handled than lies within my competence, may hold good whether the acknowledgment which the latter demands be accepted or not. The emphasis falls throughout on the evidence for a threshold of emergence—of life, of successive

levels of mind, of spiritual attitude of mind. It does not lie within my province to pass into regions beyond the spiritual threshold. Important issues in Christian belief cannot be so much as mentioned. But with regard to the fundamental issue, centering in Divine Purpose, the purport of this Preface is to indicate in advance the conclusion which will be reached in the closing lecture. No doubt the discerning reader will see that the belief therein expressed colours much that I say on emergent evolution as such. It can hardly be otherwise since the concept of Divine Purpose is germane to my constructive schema as a whole, and is not merely tacked on at the end to justify my posing as a Gifford Lecturer.

I append a list of sundry publications, in which I have said some things which supplement what I have set down in the pages that follow. There are a few sentences which have been transferred from the former to the latter.

That there are passages in these *parerga*, and in the pages of *Emergent Evolution*, which stand sorely in need of revision goes without saying. Even as I pass the final proofs of these lectures I call to mind Huxley's saying, that a book of his never came hot from the press without his wishing to re-write it.

C. LLOYD MORGAN.

BRISTOL, *September* 1925.

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LECTURE I

Concomitance of Life and Mind

§ 1. *Introductory*

If one accept a naturalistic interpretation not only of inorganic events, but of those events which we group under the headings of life and of mind, can one still believe that all these events are manifestations of Divine Purpose? I, for one, can and do accept the most thorough-going naturalism. I, for one, still retain, and am confirmed in, my belief in God.

My thorough-going naturalism takes form in the concept of evolution as emergent and universally applicable throughout nature, including human nature, bodily and mental. But I am one of those who hold that life and mind should not be identified with, but should be distinguished from, spirit. I regard life and mind as manifestations of spirit in an ascending hierarchy of such manifestations. This brings them within the orbit of natural events to be interpreted subject to the methods of naturalism. In accordance with this view, spirit is not a "quality" at the summit of the evolutionary hierarchy. It is that of which *all* qualities, from lowest to highest, are manifestations under the conditions of "time and space."

Hence, in the earlier part of this course, my aim will be to develop a naturalistic interpretation of the evolutionary advance of life and mind. Save for some incidental reference on a few occasions, I shall reserve till my concluding lecture that which is for me the most important of all issues, namely, Is the concept of emergent evolution inconsistent with belief in Divine Purpose ?

It was Lord Gifford's wish that the lecturers under his trust should "treat their subject as a purely natural science." I may at least claim that my avenue of approach purports to be scientific ; for if naturalism be not rooted in science it has no status as a contribution to philosophy.

Each man of science in his special province of inquiry deals with events which run their course in ascertainable ways. They go together in orderly clusters. Any such cluster within which the relations of events are intrinsic, or within it, constitutes a natural entity—for example, an atom, a crystal, an organism ; and in virtue of the intrinsic relations of its constituent events any such entity exhibits certain distinguishable qualities. But these entities are set in relational fields. Here the inter-relations between them severally are extrinsic ; and in virtue of its extrinsic relations to other natural entities, each exhibits certain distinguishable properties.

Events, then, and natural clusters of events as entities, behave in ascertainable ways. These ways the man of science, each within his province of inquiry, describes in sundry instances of their occurrence, and interprets as existent examples of some subsistent plan. Now this, that, or the other

man of science seeks to interpret *some* events or integral clusters of events—those which fall within his special province. He is not concerned to essay the increasingly difficult task of surveying the whole kingdom of nature and seeking to interpret it in accordance with scientific method. One who does so, attempts to formulate in broad outline the generic and still determinate plan of advance in *all* natural entities. The outcome is a naturalistic interpretation.

Is it then claimed that in this varied world there is always evolutionary advance from lower and less complex entities—each an integral system of events —to those which are higher and more complex on the same path of advance? By no means. There is also the reverse process of dissolution with degradation of higher entities to lower. Take the atomic series. The evolutionary path of advance is, let us say, from the atom of hydrogen to that of uranium. Under dissolution the path of degradation is from uranium downwards. Both processes —ascending and descending—are abundantly illustrated in all provinces within the kingdom of nature. To emphasise the one does not entail denial of the other.

Is there always either ascending evolution or descending degradation? I think we may perhaps say that any given *integral entity* stands at a halting-stage on the upward or downward path. At this stage it may be regarded as a persistent eddy of events. But much of the world is composed (1) of relatively loose events not yet tied up in entities of integral status; (2) of like events which have

been untied in the process of dissolution; and (3) of what one may speak of as the debris of certain entities, such as whole crystals, which have not, strictly speaking, disintegrated, but which have been mechanically broken up or pulverised with resultant products. All this must be reckoned with. But it does not fall within our purview in dealing with the emergent evolution of integral entities save in so far as it furnishes events contributory thereto.

So much for the concept of emergence. There is, however, another concept of wide import on which no little stress will be laid. To this I have sought to give verbal expression under "substance" and "stuff." Whether my use of the word "substance" accords with that which is traditional in philosophy (if there be *one* such usage) is an historical question that I cannot here discuss. The pertinent question here and now is whether, by its means, I am able to present a point of view which may be helpful in the discussion of our problems as they are formulated to-day.

We have seen that emergent evolution has for its subject-matter integral entities as contrasted with additive aggregates, even if these be compacted into what we call things. In any *integral* system there are certain events, or orderly groups of events, which constitute its stuff. But these items of stuff go together in certain specific ways; and this "gotogetherness," as I ventured inelegantly to call it, is its substance. In generalised form: Where *a*, *b*, and *c* go together, in specific integral fashion, so as to form the entity (*abc*), these several items

constitute its stuff, and their going together, in such manner as they *do* go together, is its substance.

The *a*, *b*, and *c* may be simple or complex, few or many. The electrons in the atom are comparatively simple—few in carbon, for example, many in lead. The atoms in the molecule of water are of a higher order of complexity and are few ; the atoms in the molecule of some compound with polysyllabic name are of the same order of complexity, but are many. Simple or complex each electron or atom is an item of stuff in entities of differing status in a hierarchy. The electron is here regarded as *an event* ; the atom as a complex group of events which plays the part of an item of stuff in the molecule ; the molecule is a more complex group of events which may play the part of stuff in an entity of higher status ; the physiological changes in a living cell or tissue are the events which constitute its life-stuff.

But in any integral (*abc*) there is one substance no matter how many items of stuff there may be—*one* substance in the uranium atom, *one* substance in the most complex molecule, *one* substance in this or that living organism. Stuff, then, is characterised by discreteness and multiplicity. Substance—that is, the specific going together of the many discrete items of stuff—is characterised by indivisible unity. One may reasonably ask : Where is this or that item of stuff at some given moment ? One cannot reasonably ask : Where is the substance at that moment ? It pervades the whole system under consideration. It interpenetrates the system. Whereas, therefore, we may well speak of *com-*

plexity of stuff, it is better not to speak of complexity in substance. I prefer to speak of *richness* in substance as correlated with complexity of stuff.

Now, obviously, there can be no substance without stuff, for that would mean going together with nothing to go together. It may be said, however, that there can be stuff without substance. But if we realise that we are dealing with some *integral entity* it should be clear that *its* stuff (the items that do go together) is strictly correlative with *its* substance. The word "stuff" covers the multiplicity of items that coexist in substantial unity. Cut out one electron from the nitrogen atom and you no longer have the substance or the stuff of that specific kind of atom.

It is worth while here to cast a passing glance at the probable attitude of the man of plain common sense. He may say: Now please drop your jargon about "integral entities" and the like; put the matter (if you can) less technically and more comprehensibly. Well, on these terms, I should ask him such a question as this. You hear a speech. Do you ever say: He talked a lot of stuff, but there was really no substance to it? If so, do you not mean that what you call the stuff—his words and the ideas they stood for—were irrelevant or did not hang together so as to form a coherent whole? That is just what I, too, mean by substance. But you may say that the stuff was there, more than enough of it. Yes; but it was quite irrelevant matter. Might you not yourself say: *That* is not the kind of stuff of which a substantial speech is

made? This means that it is not the stuff of a coherent whole, for you admit that there was no such whole. In other words, the stuff and substance of the coherent whole go hand in hand. I need not here pursue the matter any further. It must suffice to lay stress on the essential point—always discreteness and multiplicity of items of stuff; always unity and indivisibility of substance in that which is worthy of the name of an integral entity.

§ 2. *Unrestricted Concomitance*

We have seen that the stress is to be on *integral entities*, and that emergent evolution deals with their *advance* in complexity of stuff and in richness of substantial unity.

I pass now to the concept of correlation or concomitance. In my first course of lectures and elsewhere I have used the word "correlation." As thus used it signifies an unique manner of co-existence of those different aspects of events which are commonly spoken of as physical and psychical. Such correlation is, I believe, ubiquitous and universal. But we shall only incidentally be concerned with its wider sweep; for our province of inquiry is that of life and mind. Here it takes this form: There is no life without mind; no mind save as correlated or concomitant with life-processes.

Now the word "psychical," the word "mind," and the word "correlation," are ambiguous. Each may be used in more than one sense. I seek, so far as is possible, to avoid ambiguity. To that end in what follows I shall not use the word "psychical."

But in *Emergent Evolution* I spoke of a "psychical system" that has not reached the status of a "mind." There the word "mind" denoted a psychical system in which "prospective reference" plays a distinctive part. If I drop the word "psychical" I can no longer use the word "mind" in this restricted sense. Henceforward I shall use it without any such restriction. If apology be due for this change of usage it is tendered.

In view of the ambiguity of the word "correlation" I shall drop that word also, and shall speak of the *concomitance* of physical and physiological processes with mental processes. I think this change of usage will conduce to clearness. I do not abandon the concept of correlation in a definable sense, but the word "concomitance" may serve to show more clearly what I mean.

On this understanding our hypothesis is that any given organism affords an instance of the fundamental duality in nature, spoken of by Spinoza as interpretable under two "attributes." The organism may be considered (1) in physiological regard in respect of its life; or (2) in psychological regard in respect of its mind. Concomitance emphasises that which may be otherwise expressed: Never one attribute without the other. This does not preclude the belief that, underlying this two-fold expression in life and in mind, there is substantial unity common to both.

There is another word that gives endless trouble —namely, the word "conscious." Seeing how much is written nowadays on "consciousness and the unconscious" one can hardly drop it altogether.

But it is difficult to define and may perhaps be indefinable. It seems that when an act is spoken of as done consciously, this often implies that it is performed with conscious intent or under conscious guidance. But it sometimes implies only that the performance carries such and such mental concomitants, say in some sort of "feeling." I shall hereafter suggest (*cf.* Lecture V) that we may leave the context to decide in which of these two senses the word is used. Of course, in the latter and broader sense, all vital action is, on our hypothesis, conscious since it has mental concomitants of some kind. We have, however, to realise that a great number of people—perhaps the great majority of biologists—are not prepared to accept this hypothesis of unrestricted concomitance. They limit concomitance to certain processes that occur only in certain parts of the central nervous system. Among these was Huxley, who, in 1871, spoke of the concomitance of that which he spoke of as "psychosis" with "neurosis" (*Essays*, ii. 158, *cf.* i. 240).

Here again we are confronted with a verbal difficulty. Since both these words are now commonly used with quite a different meaning, their retention would lead to misunderstanding. We must find or make some substitutes. The expression "mental events"—in the broad sense of the word "mental"—has little ambiguity. I ask leave to speak of the concomitant physiological events as *bioses*, and to distinguish the events within the central nervous system as *neuro-bioses*. Under unrestricted concomitance, then, mental events accompany all bioses. Under restricted concomitance, as

advocated by Huxley, they accompany neuro-bioses only.

Now, with regard to mental events, the only direct and first-hand evidence of their occurrence is that they are "given in experience"—which means, I take it, that they exist as the items of stuff in some mind—yours or mine as the case may be.

But, rightly or wrongly, we attribute mental events to others on a basis of evidence which is necessarily indirect since we cannot ourselves verily feel what they feel, but only peradventure the like of it. Perhaps (again rightly or wrongly) we attribute something analogous to what we feel, or at any rate occurrences of that kind, to the sea anemone, or even to the amœba, on the basis of its observed behaviour. Here, however, there are no neuro-bioses, for there are no neurones to constitute a synaptic nervous system. But there are bioses. If, then, we do (1) attribute mind, of however lowly a rank, to such organisms as the infusoria, and (2) interpret in terms of concomitance, we pass from a restricted concomitance of mental events with certain neuro-bioses of high rank in some specialised region of the brain (or organ of like function) to the much less restricted concomitance of mental events with bioses or life-occurrences of some sort. The further question then arises: Can we so differentiate bioses as to say: These bioses (say in some animals) are concomitant with mental events, but *those* bioses (say in plants) are not thus concomitant? So far as I am aware we cannot do so with confidence. I am therefore prepared (until evidence to the contrary is forthcoming) to accept as a working hypothesis

unrestricted concomitance of all bioses in an ascending order of rank with mental events in a corresponding order of rank.

The position then, so far, is this. Within the whole domain of those integral entities we call organisms there is concomitance of mental events with bioses—that is, physical and physiological events. But on the hypothesis of emergent evolution (1) the advance of natural events is from the lower and less complex and rich, to the higher and more complex and rich; (2) in any higher entity along the same line of advance occurrences of the lower order are not altogether ousted by those of the higher order, but are retained and still persist in such wise as to afford the natural foundations on which these occurrences of a higher order are built.

We must consider, therefore, what will be the joint outcome if both these hypotheses (emergent evolution and unrestricted concomitance) be accepted. We must regard a man, for example, (1) as an evolutionary product, subject (2) to unrestricted concomitance. He is a complex system of bioses; he is also a complex system of mental events. If we retain for convenience Spinoza's "attributes" as meaning "in this regard or in that," then in life-regard he is a system of bioses, but in mind-regard he is a system of mental events. Substantially he is one being; but he is physical (which here includes physiological) in one attribute, mental in the other.

Contrast now the hypothesis of unrestricted concomitance with that of restricted concomitance. According to the latter, as advocated by Huxley and still widely accepted, what is felt in experiencing

is felt only in the *sensorium*. Here and here only (say in some part of the upper brain) does concomitance obtain. From what, then, do neuro-bioses arise in evolutionary genesis? They arise from other, less specialised, bioses within the same attribute—that is, in biological regard. And from what do the concomitant mental events arise in evolutionary genesis? To this question the answer under the restricted hypothesis is: We do not know. They just do arise when the physiological level of neuro-bioses is reached. Of their evolutionary genesis we must frankly confess our ignorance. On the unrestricted hypothesis they are in due course emergent in the ascending development of a mind of high status.

Let it then be understood clearly that the hypothesis of unrestricted concomitance does *not* imply that occurrences in either attribute emerge from occurrences in the other. The hypothesis is that from the very beginning, so far as we can descry it, mind is concomitant with life. This hypothesis that concomitance obtains in respect of *all bioses* throughout the living body does not, I submit, run counter to common-sense notions; for the plain man often says that some emotional thrill that he experiences involves nearly every fibre of his tingling body. It was long ago advocated by G. H. Lewes, who urged "that the sensorium is the whole sensible organism and not any one isolated portion of it" (*Physical Basis of Mind*, p. 440). It is the whole life-system that is, in the phrase then current, "the organ of mind."

If a very primitive mind be attributed to the unicellular amœba, on what grounds should it *not* be

attributed severally to all the cells of the multicellular organism, (*a*) so far as bioses (life-changes) occur in them, and (*b*) on the understanding that the concomitant mental events are integrated in the mind just as the bioses are integrated in the body? (2) Since the adult organism is developed from a fertilised ovum, may not the adult mind be developed from mental events concomitant with bioses in that ovum? This, it may be said, is not only speculative but goes far beyond the evidence. But is it an inference that is *contradicted* by the evidence? And may we not here revert to (1) above and ask: If lowly mind be attributed to the paramœcium, on what grounds should it *not* be attributed to the fertilised ovum?

§ 3. *The Concept of Reference*

Thus far I have stated the case for unrestricted concomitance in life and mind. It is, however, clear that acceptance of concomitance in this unrestricted form does not preclude restricted concomitance of mental events, specific in kind, with certain physiological events which are also of some specific kind —such as "neuro-bioses" in the brain. All the evidence points that way.

We have now to consider mental events. It is part of my thesis that they may be distinguished under two headings—(1) "enjoyment" and (2) "reference," cognitive or reflective. I shall deal with enjoyment in the next section. In this section I shall try to make clear what I mean by reference, and to show how it plays a part at different stages in the development of a mind.

First, however, something further must be said with respect to the story of life which accompanies the story of mind. The story of life is always that of what broadly speaking may be called physical *influence* and action consequent thereon. It has been well said: "The entire life of any organism consists of a series of responses to stimuli which reach it from various sources" (A. Dendy). Here one must emphasise the concept of substantial unity in the life as a whole—that which comprises multifarious bioses as items of stuff. But of each several biosis it is still true that it is what it is in response to stimulation. Any change that occurs in it is due to some physical or biochemical influence. This, at any given moment, may be traceable (1) to some external source from which stimulation comes to some part of the organism which is specially receptive thereof; or (2) to some internal source in other current bioses. And when it is traceable to some internal source there is often re-excitation, by an indirect course within the body, of the same kind of change as was initially traceable to direct stimulation from an external source. Under such re-excitation we have what may appropriately be called "physiological revival" of a change like to that which was in the first instance traceable to some specific kind of direct stimulation. It is a complex story; and we shall hereafter learn some of its details. Here and now it must suffice to lay stress on two points: first, that it is throughout a story of influence received and of response thereto; and, secondly, that there is ample provision for physiological revival.

In passing to the mind-story we are on what for most people is much more familiar ground. Not only is it familiar ground since much of it is trodden in our daily experience, but our mental steps in traversing it are readily described in terms of common speech. Hence some resentment may be felt at the introduction of more technical phraseology. But for those who wish to dig a little below the surface, it is worth while to face such technicalities as may serve to make the position clear.

I ask, first, to draw a radical distinction between " influence "—by which I mean physical influence—which is germane to the life-story, and " reference " —by which I mean something purely mental as part of the mind-story.

Let us, then, consider what happens when we are in relation to the external world. From things or events at a distance, close by, or even in contact with our bodies, influence comes in so as to take effect on our bodily life ; but reference goes forth from the mind to that from which the body receives influence. Thus a distant star influences the retina of my eye ; thereupon there is reference from my mind to Sirius. One may say, somewhat picturesquely, that *influence comes in to* the eye while reference *goes forth from the mind* that is concomitant with the physiological processes due to this influence. But the coming of influence from Sirius takes time in transmission ; whereas reference is instantaneous. If then one speaks, picturesquely, of reference as " going forth," it must not be supposed that anything travels from the mind to Sirius, as object of reference, in the same kind of physical way that light-influence travels from

the star to the eye. It is this that, in part at least, marks the radical distinction between influence and reference.

Now just as the life-story tells of the evolutionary processes and products of physical influence, so does the mind-story tell of the progressive evolution of reference. In each story we pass from lower to higher stages in the course of emergent advance. But whereas in telling the life-story we commonly proceed upwards from lower and earlier stages—say in the individual life-history—to higher and later stages, in trying to read the mind-story we more conveniently start from the high level to which, as adults, we have ourselves attained, and then work down to lower levels perhaps better illustrated in the child-mind, or the animal-mind.

We shall have, later on, to consider what I speak of as evolutionary levels of reference at greater length and in further detail. It must here suffice briefly to indicate what characterises three main levels of reference.

The highest is that of *reflective reference*. Here we have such reference as there may be in your mind or mine, on some given occasion, to European politics, to Elizabethan literature, to the Einstein theory, to one's plan for a summer holiday, for a business letter we have to write, for some experiment we wish to try. Under reflective reference there is mental rehearsal of events conjured up under intentional revival or recall. How such schematic plans take form we cannot now stay to consider. The point here is that this is a kind of reference that we do not attribute to quite little children or to animals.

Below this reflective reference is what I shall speak of as *cognitive reference*. This we find not only underlying the higher kind of reference in ourselves, but itself in evidence in all intelligent animals. It is that which chiefly distinguishes the animal-mind. In such cognitive reference, in us as in them, there is always mental revival in the form of imagery or of practical meaning for behaviour. This supplements, and forms what James called a fringe to, that which is directly given in sensory acquaintance under stimulation. We see, for example, a piece of ice and say that it " looks " cold, and hard, and slippery. What is here given in sensory acquaintance is visual ; but we have learnt to expect that, under suitable behaviour, coldness, hardness, and slipperiness will be given. That which *will* be given, and *is* expected, is referred to the piece of ice which thus becomes an object of cognitive reference. Under such reference animals and children learn through behaving, and behave more and more appropriately through learning. All true " location in space " is learnt under cognitive reference.

It is generally conceded that, concomitant with the several items of imagery in mental revival, there are physiological events. But under cognitive reference there is *meaning* in expectant prevision. And it is again, and again, and yet again, roundly asserted that there is no physiological concomitant of meaning. I think that this assertion, when it is more fully expanded, comes to this : There may be physiological concomitants of this or that imaginal item, but there is no such concomitant of their all going together in substantial unity. Our contention

is that "substance" is common to both. The bioses go together in substantial unity, and only in so far as they do so is there one life in the organism. The mental events likewise go together in the substantial unity of meaning; and only in so far as they do so is there cognitive reference on the part of one mind.

As the outcome of cognitive reference there is, then, at any given time, an integral synthesis comprising an interrelated group of mental events with substantial unity of meaning for current behaviour. But each item of stuff was, prior to such synthesis, initially independent of the others under concomitance with some specific mode of external influence. We must, therefore, apply the method of distinguishing analysis. Under such analysis we concentrate attention on *any one item of stuff* as first given in direct sensory acquaintance—in vision, in hearing, in touch, in taste, or smell, and so forth. There is here as yet no meaning, for that comes in substantial synthesis under cognitive reference. Is there, then, in respect of each several item of stuff, no reference? My contention is that, even here, on receipt of influence, reference goes forth. If it do not, how does reference begin in the individual mind? May it not be correlative with the very first touch of influence from without? But, if so, it is not cognitive reference, for there is, as yet, no relevant revival and no meaning. Let me call it *non-cognitive reference*. It is exemplified in hundreds of ways at the outset of sensory acquaintance with things and events. It is basal since all cognitive reference is founded thereon.

Now follows a little bit of purely speculative hypothesis, which is, however, cardinal to my constructive schema. I put it in abstract form with the utmost brevity.

In physical and physiological regard there is (1) influence of one entity on another, let us say of *e* on *m*. In mental regard there is (2) reference from concomitant μ to ϵ. It has been a long and difficult business to learn how best to tell a comprehensive story in which any instance under (1) has its place in a schema of all other instances of physical influence with action and reaction throughout nature. No less long and difficult a business is it to learn how best to tell how any instance under (2) has its place in a schema of all other such instances of reference in any personal mind (*cf.* §§ 38, 39).

Even so the task remains to bring these two stories into relation in such wise as to enable us to interpret conscious guidance of behaviour and conduct under cognitive and reflective reference.

§ 4. *The Concept of Enjoyment*

In the story of mind reference "goes forth" or is projicient. But such objective reference does not exhaust the story of mind; for if in the course of mental development its outcome is something mind*ed*, there is also the correlative outcome—namely, someone mind*ing*. It is to this "someone" that we must now direct reflective attention.

In some sense of the expression, the someone who minds—let us say with objective reference to something minded—does so "*with enjoyment*." What

do I mean and ask others to understand by enjoyment? Professor Alexander and I both use this word, taken over from common speech and adapted as a technical term; but our usage and the implications of such usage are not quite the same. There is, however, much in common; and such difference as there is may serve to throw sidelights on the question—which many will raise—whether the concept thus labelled has validity or value for purposes of interpretation. Here and now it is *my* usage that I must try to render comprehensible.

The word is taken over from popular speech. How is it there used? One may say that one sees with enjoyment the view from a hill-top. Here that to which cognitive reference goes forth is the landscape; and in our common elliptical phraseology one may speak of enjoying the view. Taken literally this goes far to annul any distinction; for what we cognise that also we enjoy. The landscape may be spoken of as the object of enjoyment. Still what we mean, I think, is that one enjoys *seeing* the view. But one also enjoys *breathing* the fresh air, *tingling* with healthy exercise, *appreciating* the comments of one's companion, and so forth. And all these go together in the someone that then and there one *is*. It seems, then, that under cognitive reference we get the view as seen, and that under enjoyment we get seeing the view, *and much else*.

Of course, we commonly take the "much else" for granted; but, apart from it, would one be the someone that one is when one sees the view? Under reference, cognitive or reflective, we single out the specific somewhat to which this reference goes

forth. No doubt correlative with this *item of reference*—one among many, for there is also reference to the balmy air, and "much else"—there is an *item of enjoyment* in the someone concerned. But *how* one enjoys, then and there, comprises *all* the items of enjoyment that go together substantially at the time-being.

That shifts the emphasis on to the "how" in enjoying. Let us grant that we can in some fashion —difficult enough—describe our enjoyment. Then, I suppose, that most people will say that what characterises any kind of enjoyment is that it is pleasant or agreeable. Now I ask that if the word be used, as I suggest, for interpretative purposes, this feature, important as it is, may be left out of account. That means a broadening of the connotation of the technical term so as to include either agreeable or disagreeable enjoyment. This may seem an outrage to common sense. But people have grown accustomed to "acceleration" as either positive (speeding up), or negative (slowing down), or even mere change of direction. They may soon grasp that, as we use the term, enjoyment may so change as to be relatively positive (agreeable) or negative (disagreeable). We need *one* word for that which may carry either positive or negative signature. I can find no better term than enjoyment.

So far, on the hill-top in view of the prospect, there is cognitive reference, and there is enjoyment —inseparable, but I think distinguishable. Suppose, however, that one feels "fit" or "out of sorts." There is enjoyment. Is there *cognitive* reference? No doubt if we think about it, and ask ourselves

why we feel thus or thus, there is reflective reference. There is a mental event which as reflective folk we want to interpret. We may say perhaps: There is probably a concomitant set of organic changes in the body—a subtle balance of many physiological events that goes along with this kind of enjoyment. All this is in place *for reflective interpretation.* But is it a bit of one's naïve unsophisticated experience? Is it what you and I unreflectively have without thinking about the why and the wherefore of our having been just then as we then were?

And what about the "rathe lamb," the frolicsome puppy, the whirling swift? I surmise that they, too, feel pretty fit. But what know they of occurrences in the body—what about physiological poise and the like? There is probably no such *reflective* reference on their part for purposes of interpretation. I doubt if there is even cognitive reference to events in the body. It may be said that the all-overish enjoyment is located in the body as a whole. I am not sure that they know that they "have" a body, under the given circumstances. But I am not concerned to deny *non-cognitive* reference of a specialised kind (*cf.* § 3). I am rather concerned to urge that what one may speak of as pure enjoyment bulks large, while the items of cognitive reference, if present as such, are but little differentiated. I think that there is an intelligible sense in which it may be said that they enjoy feeling fit without knowing in cognitive fashion that they do so.

A question may here be raised. It may be said: You speak of enjoyment in feeling fit; tell us then what is enjoy*ed*?

Let me ask another question. You and I are now living ; what is lived ?

I know not how to frame a preliminary answer to this question save by saying that it is living, or life if you will, that is lived. So, too, it is enjoying or enjoyment, if you will, that is enjoyed. I am not satisfied with this reply. But let it pass for the present. It serves at any rate to emphasise our cardinal contention that enjoyment is concomitant with life.

The living being as such is recipient of physical influence from surrounding entities ; and they are recipient of influence from it. The organism is a centre of give and take. Under the take of influence the course of events within the organism is changed ; under the give of influence the course of events outside it is changed. The give or output of influence of an organism as a whole we will call its "behaviour."

Is then such behaviour one with life ; or is it other than life ? That depends on definition. If we say that life includes *only* the intrinsic relations of bioses *within* the organism, then behaviour is other than life. It is what the living thing *does* ; not what it *is*. But if we say that life includes *also* extrinsic relations of organism to environment, then behaviour is one with life. It falls within a broader concept of life. The former is the more restricted physiological concept ; the latter the more comprehensive biological concept. I submit that it is open to us to accept either, according to the context of the inquiry that is in focus. In the present context we will accept the more comprehensive concept on the understanding that the

organism is central in the give and take of influence. Life still implies *intrinsic* relations within the organism; but it finds expression in behaviour which implies *extrinsic* relations between the organism and its environment. Within the organism the items of stuff in relation are bioses or physiological events. In an intelligible sense these items are severally lived; but only in so far as they go together in substantial unity is there a living organism as one integral whole.

Pass now to mind as concomitant with life. Here again intrinsic relations should be distinguished from extrinsic relations. As thus distinguished enjoyment is the integral set of intrinsic relations. Under a cognitive reference we have the extrinsic relatedness commonly spoken of as that of the mind to its object. Broadly speaking the objective field to which reference goes forth plays in mental regard the part that the physical environment plays in biological regard, and the going forth of reference is more or less closely in accord with the output of behaviour. Such accord is the outcome of evolution.

In respect of mind, therefore, the question arises: What are we to understand by the expression "in mind?" Are we to include only intrinsic relations in enjoyment—that is, all the varied modes of minding including feeling fit and the like? Or are we to include also that which is objectively minded—say under cognitive reference? Professor Alexander takes the former view. For him, as I understand, what is in mind and constitutive of mind is enjoyment and enjoyment

only. All that is objective under what I call cognitive reference (of which he renders a new-realistic account quite different from that which I can accept) is distinctly non-mental.

Accepting as I do in the present context the more comprehensive concept of life, I accept also the more comprehensive concept of mind. In other words, I take the expression "in mind" to include what Berkeley spoke of as there "by way of idea" as well as that which is distinguishable as there "by way of attribute." Hence for me there are in mind (*a*) intrinsic enjoyment, and (*b*) the projicient outcome of extrinsic reference, cognitive or reflective.

Here and now intrinsic enjoyment is in focus. The question was raised: What is enjoyed when someone is enjoying? I submit that in an intelligible sense one may reply: The several items of constituent stuff are enjoy*ed*; but enjoy*ing* is the substantial unity in someone, or in some mind, however lowly in status. Enjoyment comprises multifarious items of stuff. One of these which has emphasis at some time—being is reflectively singled out—say, seeing the view from the hill-top. Then we say: *This*—among many other items—was enjoyed. But it was enjoyed by someone—say, by me. What, then, am I? Someone other than the enjoyment I call mine? Nay; intrinsically I *am*, in mental regard, the emergent synthesis of all the items of stuff, severally enjoyed, subject always to substantial unity in enjoying.

But within the interpenetrating synthesis of enjoying I believe that the several items of stuff—seeing the view, breathing the fresh air, tingling with

exercise, feeling fit, appreciating the comments of my companion, and the rest—have each a quality of enjoyment all its own. Here my concept of the intrinsic nature of enjoyment—as through and through, from first to last, subject to difference in quality—differs, as I understand, from that of Mr Alexander.

§ 5. *Back to Spinoza?*

"Most writers on the emotions and on human conduct," said Spinoza, "seem to be treating rather of matters outside nature than of natural phenomena." Not so did he treat of them. And here my cry is: Back to Spinoza. Does this mean that I too "shall consider human actions and desires in exactly the same manner as though I were concerned with lines, planes, and solids"? Not so, unless in accordance with the trend of his teaching we may translate "geometrically" into the wider concept to which "naturalistically" now gives expression. In any case we must treat them subject to emergence. When I say: Back to Spinoza, I mean: Back to the foundations laid by Spinoza on which may be built a new superstructure that incorporates a concept of evolution unknown in this day. We must paraphrase his statement and say: Our aim is to treat all mental events, including all modes of human perception and thought, and all modes of human emotion, in exactly the same manner as though we were concerned with any other instances of advance within the plan of emergent evolution. In brief, mind no less than life, and life no less than atomicity or molecularity, fall within the emergent schema.

Since I owe a debt to Spinoza I feel called on to say a few words in its discharge. But since (1) I make no pretence to exact scholarship ; since (2) I am here concerned only with that part of his thought which deals with what I call concomitance ; and since (3) I may read into his teaching closer accord with my own views than the text of the *Ethics*, taken as a whole, warrants ; it will be better to raise questions as to what he sought to convey in the language of his time, than to presume to do more than express a tentative opinion as to what the answers should be.

Spinoza says, for example : " The object of the idea constituting the human mind is the body " (Pt. ii. Prop. 23). If I paraphrase thus : " The object (that is, ' a certain mode of extension ') which is the physical concomitant of the *enjoyment* which constitutes the human mind is the living body," would Spinoza accept or reject this reading of his thought ?

Again, when Spinoza says : " By affection or emotion I mean the modification of the body whereby the active power of the said body is increased or diminished, aided or constrained, and also *the ideas of such modification* " (Pt. iii. Def. 3), may I substitute for the words in italics " the enjoyment which is the mental concomitant of such modifications " ?

I surmise that Spinoza might reply, " Yes, that is part of my meaning, but it is by no means all that I wish to convey ; for it empties the word ' idea ' of all distinctively cognitive reference, and that is far from the import of my teaching as a whole." May we then take what I speak of as concomitant enjoyment as *part* of the connotation of the word

" idea " in Spinoza's usage ? If so we shall expect to find difference of emphasis on this part and on that in different passages. Is it this part rather than the cognitive part that receives emphasis when Spinoza says that " a mode of extension and the idea of that mode are one and the same though expressed in two ways " (ii. 7, note) ; and that this must be taken as " applying not more to men than to other individual things, all of which, though in different degrees, are animated " (ii. 13, note) ?

I take it that all might agree that it is part of Spinoza's teaching that, as " expressed in two ways," neither can cause any change in the other—that there can be no interaction of modes of expression. Hence (here I will venture again to paraphrase Spinoza) (1) so long as we consider events as physical modes we must interpret the whole of nature in terms of physical action only ; and (2) so long as we consider events as mental modes we must interpret the whole of nature in terms of mental reference only. These clauses do not present alternatives—this or that—one to be accepted and the other rejected. They are complementary. This supplies what that lacks. In Spinoza's seventh proposition (Pt. ii.) they are united. The " order and connection of ideas is the same as the order and connection of things." Whatever else this may mean, may we substitute as *part* of its meaning : The evolutionary advance of mental events is interpretable on the same principles as that of physical events ? Such is the teaching of emergent evolution. I think Spinoza might look kindly upon it.

I even venture to hope that he might look not

unkindly on some such paraphrase as this: The order and connection of mental events, say in man, expresses in one attribute *the same substantial unity* as the order and connection of physiological events expresses in the other attribute.

In any case Spinoza clearly realised that, under reflective inquiry, bodily expression is a guiding clue to inference with respect to mental expression. He says: "In order to determine wherein the human mind differs from other things, and wherein it surpasses them, it is necessary for us to know the nature of its [concomitant] object, that is, of the human body" (ii. 13, sch.).

It may be said that I unwarrantably insert in brackets the word "concomitant"—whereas Spinoza probably meant the body as an object of cognitive reference. I submit that he may have meant both.

Be that as it may, we must now turn to the cognitive part of the connotation of the word "idea." Take first this cardinal proposition "The human mind perceives no external body save through ideas of the modifications of its own body" (ii.? 26). I submit that here it is open to us still to lay stress on that which I speak of as concomitance. No percept, we may say, without such and such bodily concomitants of our enjoyment in perceiving. But in the second corollary of the sixteenth proposition Spinoza says "that the ideas we have of external bodies indicate rather the constitution of our own body than the constitution of external bodies." Here it seems quite clear that the emphasis is cognitive. The emphasis is not on enjoyment in perceiving, which has its concomitant in some brain-process

(let us say), but on something perceived—on the idea as having reference to the external body. This is endorsed by a passage in the proof ii. 26. " In so far as the human body is affected by an external body, thus far it (the mind) perceives that external body."

There can, I think, be no doubt that Spinoza here uses the word " idea " with emphasis on cognitive reference to the external thing on the part of the finite human mind. And I believe that, even when he uses this word with emphasis on what I speak of as " enjoyment concomitant with modifications of the body," this must be taken to imply for him cognitive reference to these changes, that is, to the mental events which are concomitant with these bioses. Cognitive to the core, introducing the concept " *idea ideae* " to differentiate reflective reference, Spinoza would ask : How else could they be *known* by the finite mind ? How else could any idea as " objective essence " within the finite mind tally with and reveal, as he taught, the " formal essence " as it veritably *is* within the mind of God as infinite ?

We thus run up into a region of Spinoza's constructive philosophy which lies beyond our present purview, but which is none the less cardinal to his teaching as a whole.

LECTURE II

Behaviour

§ 6. *Our Schema in Outline*

In the foregoing lecture I tried to state the case for unrestricted concomitance. Starting from the widely current hypothesis of the restricted concomitance of mental processes with certain physiological events which occur only in the brain, or in some analogous organ in the invertebrates, I was led to extend the hypothesis so as to include such mental events as we may infer from the behaviour of unicellular organisms. Since the more complex organism, with its many cellular constituents, is an integral system comprising the physiological events or bioses within that organism as a whole, it seemed not unreasonable to entertain the hypothesis that, concomitant with all these bioses, there are mental events, or processes, which constitute mind in the broadest acceptation of this word.

On this hypothesis—one to be tried out on its merits—life is the synthetic unity of events in physical and physiological regard; mind is the different expression of like unity of events in mental regard. In my concluding lecture I shall urge that life and mind are manifestations of Divine Purpose, one and indivisible in God as ultimate Substance.

Since it is part of my aim to distinguish life and mind from Spirit I seek also to use distinctive words. Hence I speak of " manifestations " of Spirit. But Spirit is nowise separable from life and mind, nor they from it. What is given for reflective contemplation is a world-plan of natural events. I hold that this world-plan is a manifestation of Divine Purpose. We human folk are, in life and mind, integral parts of that world-plan. We too are manifestations of Spirit which is " revealed " within us. Each of us *is* a life, a mind, and Spirit—an instance of life as one expression of world-plan, of mind as a different expression of that world-plan, of Spirit in so far as the Substance of that world-plan is revealed within us. The world-plan, through and through, from its lowest to its highest expression, is manifestation of God ; in you and me—in each of us severally—God as Spirit is partially revealed. This revelation is only partial since each of us is only an individual instance of that which in full manifestation is universal.

Keeping here and now to life and mind as expressions of world-plan, under duality of nature, each is inseparably concomitant with the other. And there is a valid sense in which it may be said that intrinsically neither its life nor its mind passes beyond the confines of this or that embodied and enminded entity. But in respect of its life it is, as we acknowledge, extrinsically in relation to multifarious physical events around it. From the action of these it is in receipt of influence ; on them it has influence in the reaction of behaviour. So, too, in respect of its mind. It is not only a system of intrinsic enjoy-

ment; it is also in extrinsic relation to an objective world around it through reference, first non-cognitive, later cognitive, in due course reflective, in natural order of advance.

As expressions of world-plan life and mind, each in its several regard, afford, as I think, illustrations of emergent evolution along lines of advance towards further complexity in the stuff of events and towards increasing richness in substantial unity. Progressive advance in evolution is here my theme; and I submit that it is irrelevant to say that, under retrogressive dissolution, there is also, and often concurrently, a reversal of natural progress in regress no less natural. No doubt there is. And it may be that in life and mind there are always both, in subtly changing equipoise. But it is the salient feature in *progress* that I seek to elucidate.

It should, however, clearly be understood that unrestricted concomitance and the emergence of new qualities are two quite distinct concepts. Spinoza could advocate the one long before the other had been thought of. No less clearly should it be understood that, distinct from either concomitance or emergence, is the concept of reference as that which in mental regard is the reciprocal counterpart of influence in physical regard. Why this should be so—nay more, why there should be either influence or reference in the realm of nature—I know not. Both are given. My hypothesis is that each is correlative to the other in the evolution of life and mind.

These three concepts—unrestricted concomitance,

emergence as the keynote of progress, and reference as correlative with influence—each of which may be accepted or rejected independently of the others, are knit together in the schema that I advocate. Thus combined in one synthesis they contribute, as I think, to its substantial unity.

The schema as it is here offered for consideration and criticism is frankly naturalistic. But, for me, this means only that it deals with nature as we find it. My belief is that, apart from God, that which we call the realm of nature would have neither being nor evolutionary becoming. But, quite irrespective of such belief, I contend that naturalism as such (if we talk in terms of *isms*) remains quite unaffected. The natural realm is what it is, and as it is, whether its being and its progress be further explained in terms other than naturalistic, or left unexplained.

None the less it follows from concomitance that the mental and the physical events in any given organism belong to *one natural realm*. Avowedly, therefore, the hypothesis I advocate is alternative to that of interaction of entities belonging to two disparate realms of being.

Taking the latter hypothesis in one of its forms, permit me to speak of it as *animism*. Then animism is antithetical to naturalism. According to animism mental processes are not unrestrictedly concomitant with bodily events, but belong to a disparate entity that has being independently of the body which it controls. If we speak of this as the mind, it enters into possession of the body, using its sense-organs as instruments of reception and its motor organs as

executive instruments. Animism implies what Mr Johnson speaks of as impartial dualism, whereas naturalism implies duality in attribute.

And what of the soul ? Cardinal to the animistic hypothesis is the " anima " as belonging to a realm of being disparate from the physical realm to which the mechanism of the body, as such, belongs. This anima is spoken of sometimes as life, sometimes as mind, sometimes as spirit. If the word " soul " be still used in this context it is, I suppose, synonymous with anima. There are, however, many dualists who would say that soul should be distinguished from life. They would not speak of the soul of a plant. There are others who would say that though we can properly speak of the soul of man we should not speak of the soul of a cow or a guinea-pig. The word clearly needs careful definition, or at least adjectival qualification. Some might, for example, distinguish the rational soul of man as something more than mind and perhaps something less than spirit.

In any case what is currently understood by " the soul-theory " has its roots in dualism. And what some people mean when they speak of " a psychology without a soul " is a psychology other than dualistic. On these terms the advocate of concomitance is precluded from using the word within his thesis. There is, however, a sense in which he may, under suitable definition, speak of the soul as distinctive of that level of mental development at which a *concept* of Spirit is within the field of reflective reference. In that sense it earmarks an important step upwards in the evolution

of mind. But in that sense it carries no dualistic implications.

Here, and elsewhere later on, it is impossible to indicate the nature of the hypothesis of duality in attribute, in aspect, in expression, in diverse regard, or however otherwise it may be stated, without indicating also the nature of the dualistic hypothesis, whether it take the guise of animism or some other guise. I am concerned to say what I can in support of the former. But let it not be supposed that I regard or would speak of the latter, and those who support it, with disrespect. The issue raised is no doubt controversial; it is in close touch with deep-seated convictions. Let each party state clearly the evidence as he reads it, and set forth the arguments he relies on in favour of his thesis. Let him weigh the evidence and criticise the arguments brought forward by others. But let neither party speak of the other as "obsessed by this or that dogma"—whatever this may mean—or use words in a sense intended as opprobrious. It can serve no useful purpose to descend from the platform of recognised good manners in serious controversy.

One further implication of the interpretative schema I advocate is this. In the realm of natural events as they run their course in some given organism on a world-plan we seek to discover, there is, we contend, duality of expression in attribute. On the one hand there is physical and physiological expression to be dealt with in terms of action under influence—by which I mean, here and henceforward, physical and physiological action and influence. On the other hand, there is mental expression to be

dealt with in terms of enjoyment and of reference. Thus of any such sequence of events two stories may be told, a life-story and a mind-story. But *as stories* neither can interact on the other; "this" aspect of the natural events themselves can in no wise interact with "that" aspect.

It may then be asked: How, on this hypothesis, can mental reference count in the guidance of events, as it assuredly does in many forms of animal behaviour and in all forms of human conduct? The answer we shall give turns on the evolutionary story of reference when some *prevision* of that which is coming is concomitant with some *present* mode of action in the life-story, implying influence received under external stimulation and given back in behaviour.

§ 7. *Plain Tale of Behaviour*

In entering on more detailed consideration of life and mind we have to start somewhere. Let us begin with such behaviour as is exemplified by the lower organisms.

We must agree at the outset to use the word "behaviour" in some definite sense. For us, behaviour is a mode of bodily action. It falls within the story of life. Others—and quite justifiably under suitable definition—speak of mental behaviour; we do not; though of course, for us, in all instances of behaving there is concomitant accompaniment in enjoyment and in objective reference.

May we further agree provisionally and for the present to use the word behaviour for some describ-

able performance of an organism as a whole in relation to its environment? One does, no doubt, sometimes speak of the behaviour of the heart, of the salivary glands, and so on. But to cover all this we have the expression "functional action." Let us then reserve the word "behaviour" for that which an organism—a dog, or an amœba, or even a plant—does, or how it "acts," in this situation or that. The distinction is drawn only for convenience of treatment here and now.

Such whole-action behaviour is responsive. But so, in a broad sense, is all part-action within the animal or the plant. It has been said, for example, that the entire life of an organism consists of a series of responses to stimuli, external or internal. We may, however, at least provisionally, distinguish the responsive act as a whole to which partial responses are contributory.

It is characteristic of organisms that they are delicately sensitive to certain kinds of physical influence within a range of air-waves, for example, or of electromagnetic pulses, to which approximate limits can be assigned; characteristic, too, that there has been, in the course of evolution, differentiation of receptivity for varied kinds of physical influence. As the outcome of reception the course of physiological action throughout the organism is in some measure changed. The effects of the reception of physical influence may, however, spread along definite channels which are thus differentiated as lines of *intervenient events within the organism.* And the effects of these intervenient events are further changes under which the organism

is said to respond to influence of this kind or that. We have then reception, transmission, and response.

But where does all this obtain ? In the organism ; at or within its confines. To what, then, does the organism respond ? To the physical influence which it receives under contact, or from beyond its confines, through influence transmitted from a distance. Take, in illustration, the plants that turn lightwards in a cottager's window. To what do they respond ? Is it to the sun as a source of radiation ? Under the interpretation of a reflective observer, Yes. In strictness, No. They respond then and there to the influence that is received. And not only in such an instance of plant-life, but in all responsive behaviour, as such, that to which the organism responds is not to a thing at a distance, but to some physical influence received at home.

This may seem rather technical. But does it not lead to the distinction—surely not unimportant—between the behaviour itself, that which evokes it, and what follows from behaving ?

With regard to the behaviour itself, as observable performance on the part of some organism, it is convenient to speak of its *form*. Thus in a waterbird there is difference in form, in walking, running, swimming, and diving, though many of the same muscle-groups are in functional action in all of them. *Form* in this sense is the visible expression of the way in which a number of items of " stuff " go together in " substance " so as to render behaviour a recognisable whole. Here we may compare what we call "good form" in the cricketer or the golfer.

When one surveys the vast collection of instances of behaviour presented for our study, one may classify them either (*a*) under specific forms, or (*b*) in view of this or that outcome of the behaviour. The former classification is based on direct observation at the time-being. Thus and there does a bird, let us say, behave at successive phases of its life-history between immigration and emigration. The male, for example, occupies a territory; it behaves therein in describable ways; it effectively pairs; a nest is built; eggs are laid; incubation follows; the young are hatched; they are fed, and protected; parents and offspring depart to the South. Here our primary aim is to get the observable facts. Forms of behaviour readily distinguishable, some of them quite new to the individual under observation, are in evidence. These we classify under specific forms, and compare with those that are observed with a difference in the life-history of other animals. They constitute a series of acts in recognisable, but not necessarily invariable, order of sequence.

But one who thus observes and describes, compares and classifies, may not, and seldom does, therewith rest content. He seeks to go a step further, thus passing from (*a*) to (*b*). He asks: What is the observable outcome of this or that act? To what does it lead? He regards the successive acts as "links in a chain."

On direct observation may be founded not only particular statements of what is done by this or that individual bird (let us say) on some given occasion, but generalised statements of what such birds do

in normal life-routine. We have under (*a*) description of this or that act, and under (*b*) the place of such an act in a natural plan of sequence. This is a step towards interpretation. One can say: Take any three acts in due order of sequence—say *l*, *m*, *n*—then, in normal routine, *l* is precedent to *m*, and *n* is consequent on *m*.

A further step introduces the external conditions of this or that act. This implies receipt of influence and response thereto. The position then is: We find that *l*, *m*, *n*, run their course in accordance with a "precedent and consequent plan"; *but* subject to such response as is concurrently due to stimulation received from outside.

Now if we go no further than this we get what may be called a plain tale of behaviour. Let me give three examples.

1. Embed a bean in suitable soil. The tough skin bursts and the "cotyledons" open out. In one direction a shoot grows upwards, reaches open air and light, becomes green, and produces leaves. In the other direction a root grows downwards into deeper soil. According to the position of the bean the growth may be straight forward or take a curved course. We may speak of the eventual directions of shoot and root as towards and away from the light. But in plain tale we must realise that the bean in opaque soil is not subject to the influence of light-waves. Or we may speak of these directions as "geotropic"—"negative" in shoot, "positive" in root—under "gravitative attraction." But we must realise that this influence is constant and the same for the whole organism.

2. Place a starfish on its back. The arms move and twist about, and the tube-feet are strongly protruded. If a small pebble be laid on one of the arms near the tip, the tube-feet adhere to it and the arm-tip bends round it ; the neighbouring tube-feet are more strongly protruded ; those on other arms are little affected. But if in its varied excursions another arm so turns over as to reach with its tip the rock-surface, the attachment of neighbouring tube-feet spreads, and the tube-feet elsewhere are withdrawn, including those attached to the pebble which may be dropped. And if two arm-tips, say (1) and (3), nearly simultaneously start the righting behaviour, one or other soon relinquishes hold.

3. Young eels, or elvers as they are called in the West country, may be seen in great numbers near the water's edge of estuary streams in the Spring. In the running water they swim persistently up stream. To leave the sea where they have been hatched and to reach sweet-water pools is the plain-tale outcome of this behaviour. Place some of the little fellows in a bowl and stir so as to set the water in circular movement, most rapid near the periphery. They all swim against the current near the edge of the bowl. Reverse the direction of stirring. Every one of them turns round and forges up stream in the new direction. In an estuary they swing to and fro with the flow and ebb of the tide. But under estuarine conditions there is more prolonged ebb than upward flow. Hence there is an up-stream balance to the good. Under such behaviour many of them are bound to reach their destination.

Later in life, however, after they have grown and

thriven in their freshwater habitat, and when the period of sexual maturity approaches, they swim with equal persistence down stream. Place one in running water; with the current it goes. That is now the plain-tale behaviour in relation to the stream in its flow. To leave the sweet-water pools where so much or their life has been passed, and to reach the ocean where they spawn, is now the outcome of this their later behaviour. If they just go on and on down stream, many of them, should they escape eel-traps and the like, are bound to get there.

This plain tale may be extended under further observation so as to give the complete life-history from hatching, say in the Sargasso region, as precedent (*l*), to fertilisation of ova, as consequent (*n*).

§ 8. *Interpretations of Plain Tale*

The three examples I have adduced in illustration of what I speak of as a plain tale are taken from such behaviour as may be observed in organisms of low estate. The bean, the starfish, and the elver, severally behave in certain given circumstances which we may call the situation, and in each case the acts afford instances of a plan or routine of action such as may be observed in respect of any bean, starfish, or eel, in a like situation. I use the word "plan" or "routine" for that which the observer judges to be common to the several instances, in the same sense as one speaks of the plan of events in the atom or in some chemical transaction. So far, even in plain tale, one takes the given instance with reflective reference to what we judge to be the

plan common to all such instances. And so far one interprets.

In the case of the eel I glanced at the whole life-history so far as it is known. One could in like manner take the whole life-history of the bean, or of the starfish. But any such life-history can be told in plain tale of that which observably happens. What one then says is: On the basis of plan so far as known through observation of instances, " this " episode has such and such a place in the normal routine.

So far as the plain tale is concerned, the trained observer in his detailed work deals with some phase of current behaviour such as may conveniently be symbolised (as above) by *l*, *m*, *n*. This he selects so as best to focus the inquiry in hand, having due regard to the influence of external events on the organism that thus behaves. And on these terms it is clear that one may, on our principles, substitute willow-wren, water-vole, monkey, or man, for bean-plant, starfish, and eel. Only for convenience of treatment—since we must begin somewhere—did we start with instances of behaviour which may be observed in organisms fairly low down in what we commonly call the scale of life.

In some respects it would be more convenient to start with the behaviour of man and work downward to the bean than to start at so low a level as that at which the plant stands, with a view to working upwards to human conduct. But our theme is emergent evolution; and our hypothesis is that from first to last two stories of the onward advance in events may be told. Where there are stories to

tell it seems better to go forwards from the beginning than backwards from the closing chapter to the introduction. None the less if we seek to participate in writing the interpretative stories, if we wish to review them in retrospect, if we feel that passages here and there, nay, perhaps whole sections, need continual revision in the light of further and fuller evidence, we must consider the end of the stories, up to date, in the upward course of events.

We are committed to a two-story hypothesis because, on review of the evidence, this, as I think, best enables us to interpret the facts that are given in all plain tales. What for us does this imply? Taken in conjunction with unrestricted concomitance, it implies (1) that any selected episode in any given plain tale is susceptible of a two-fold interpretation (*a*) in terms appropriate to physiology, and (*b*) in terms appropriate to psychology; (2) that under (*a*) the story deals with action under influence, with reaction in response of the organism as a whole, and with such action and reaction as occurs in the train of intervenient events between stimulation and behaviour, while under (*b*) the story deals with accompanying enjoyment and with mental reference correlative with influence under (*a*); and (3) that, though each story throws light on the other, neither story as such *makes* the other story what it is. Taken in conjunction with emergent evolution there are further implications to be considered later on.

It should now be clear in what sense I differentiate a plain tale from a story. By a story of this or that plain-tale episode I mean one which *interprets* either

(*a*) in physical and physiological terms or (*b*) in mental terms of enjoyment and of reference.

But is there a two-fold story of one natural order of events? That is the hypothesis that I am concerned to advocate. There are, however, other hypotheses. Broadly speaking, two other hypotheses stand out prominently. One of them is radical behaviourism according to which there is only one natural story—biological and substantially physiological. A mental story for the telling, as science tells, there is none. The other hypothesis may, for the present, be represented by animism. According to this there *are* two stories, but not of the same set of natural events; nay rather of quite different events in quite disparate realms of being—that of the physical body as such, and that of the anima that possesses the organism and uses the body for its ends.

It is noteworthy that what on our hypothesis and on that of radical behaviourists is called behaviour (action under stimulation) is not what the animist calls behaviour (mental procedure). This difference of usage of the same key-word gives rise to not a little ambiguity, as must always be the case where one verbal term has two quite different connotations.

Furthermore it is by no means easy to say what "behaviourism" stands for. If we define behaviour in terms of stimulation and response—or in some analogous terms—it is clear that in these terms, and in these terms only, must the story of behaviour, as such, be told. But it does not follow that there is not another story which deals with the mental accompaniments of stimulation and of responsive

action. Now there are some behaviourists—Dr Yerkes for example (*cf.* § 34)—who are quite distinctively two-story folk. And were it not that the label " behaviouristic " has taken such hold in modern discussion, it would be far better to speak of this hypothesis as " naturalistic." On this understanding one might reserve the word " behaviourism " for that which I spoke of above as *radical* behaviourism—that which is advocated by Dr J. B. Watson.

The cardinal feature of radical behaviourism is the denial of any mental story that can be told in consonance with the methods of science. Let us hear Dr Watson. " The behaviourist," he says, " finds no evidence for ' mental existences ' or ' mental processes ' of any kind " (*Psychology from the Standpoint of a Behaviourist*, 2nd ed. p. 2, footnote). That is clear enough. I assume that the statement is to be taken quite literally. If there be passages which are difficult to square with it, that is Dr Watson's affair, not mine.

Now what by common consent is called " psychology " deals with mental processes of some kind which are existent in some sense. Clearly then, if there be no evidence for mental processes of any kind, as asserted, there is no evidence for the subject-matter of psychology. Hence it would seem that, if this be the position, the simple and direct course should be to say frankly that, for the *radical* behaviourist, there is no scientific province of psychology. Dr Watson, however, elects to apply the word " psychology " to what he speaks of as " whole-action physiology," reserving the word " physiology "

for that which deals analytically with part-action, that is, for the branch of science that " teaches concerning the functions of the special organs " (p. 19). But is this what most people, who in some measure accept it, understand by " behaviourist psychology " ? (*cf.* § 27).

I am concerned chiefly so to clear the ground as to render comprehensible my own hypothesis, namely, that not only in human affairs, but in all cases of behaviour, there is a two-fold story—the one a life-story, the other a mind-story. It is avowedly naturalistic. But, if the radical behaviourist says : Never, even in human affairs, is there more than one story ; or if the animist says : Never, in the whole range of life and mind, is there only one realm of events ; then their hypotheses differ from mine.

The three hypotheses may be thus summarised :

1. *Radical behaviourism*—one story only, substantially physiological and biological.

2. *Naturalism*—a two-fold story of physiological and mental events in concomitance.

3. *Animism*—two different stories of interacting events in disparate realms of being.

With regard, then, to the plain-tale behaviour of the elver forging up stream (1) it may be interpreted in terms of radical behaviourism. Here there is denial of any enjoyment or any mental reference on the part of the organism. (2) It may be interpreted in terms of two-story naturalism. Here there is attributed to the eel current enjoyment and at least non-cognitive reference, probably not a little cognitive reference in detail correlative with influence received. (3) It may be interpreted

in terms of animism. Here, in the disparate realm of being to which the anima belongs, there is retention of the past in "memory," there is an end in view to be attained however dim and vague may be the envisagement of that end, and there is endeavour to reach that end under an "urge" that drives onward to its goal.

All three hypotheses should be treated with respect since they are widely held with conviction in all sincerity. Each is still on trial. If I advocate one of them in the two-story hypothesis, I may at least ask for a patient hearing.

§ 9. *Guidance, Trial, and Error*

The bean, the starfish, and the eel exhibit a sequence of *acts*, or instances of whole-action behaviour, in plan or routine which is disclosed to the reflective observer. The net result of such a series of acts is its *outcome*. One may say, then, that in accordance with routine the behaviour has *direction* towards its outcome.

May we say that there is *guidance* towards that outcome as an end in view? On the animistic hypothesis, that in effect is what we should say. The direction of behaviour is always expressive of guidance by the anima; and the urge of behaviour onwards towards its outcome is always due to "hormic" activity. Nay more, it is said that only on this understanding may we properly speak of an "act"; for an act betokens an agent, and in our present context the agent is the anima that possesses the organism.

On the hypothesis of radical behaviourism there is no guidance in these or any other instances of behaviour; for guidance implies at least mental prevision or prospective reference, and this is barred since there is no evidence of mental process of any kind.

When both animist and radical behaviourist push their conclusions home, then for the former *all* behaviour, properly so-called, betokens guidance with some foresight of an end as yet unattained. Of this guidance the observed direction of behaviour towards its outcome is adduced as evidence. For the latter *no* behaviour affords evidence of guidance in any sense. From no acts of the higher animals or of man can prospective reference as part of a mental story be inferred.

What then is the attitude to be taken under our hypothesis? As I read the evidence, in *some* behaviour there is guidance *under prospective reference*; in some behaviour, however, there seems to be no evidence of guidance as thus characterised. I cannot therefore regard behaviour directed towards an outcome as in itself affording evidence of guidance either in the animistic sense or in that sense in which I use the word.

In this latter sense guidance of action first appears when, in the evolution, or in the individual development, of a mind reference becomes prospective—though, of course, the evolution of guidance under reference does not end there.

It must be remembered that on my hypothesis reference in the mind-story is always correlative with influence under external stimulation or in-

ternal excitation in the life-story. As I write there fall on the tympanum of my ear certain air-vibrations. These are translated into an auditory pattern of some sort in the cochlea. In part-response I subvocally murmur: "That's the wise thrush." But swiftly I lean forward at my desk and look up to the topmost forkings of the lime-tree across the way. Perhaps I subvocally murmur: "I thought so. There he is in one of his customary stations."

I urge that there is here a two-fold story for the telling. There is a story in terms of stimulation and response. I do not deny Dr Watson's claim that suitable modes of "instrumentation" would disclose the nature of the subvocal response in tremblings and incipient twitchings towards utterance not fully or overtly expressed. This may well be part of the life-story. But, on what seems to me to be evidence—and is, as they tell me, evidence for others in a like situation—there is another story, that of cognitive reference to the thrush on the tree-top and reflective reference to the poet's "wise thrush." No doubt the new realist may say that this doctrine of reference is open to criticism. What I speak of as cognitive reference to the thrush he interprets in terms of direct apprehension. It is, however, with my hypothesis, not his, that I am here and now concerned.

I cannot stay to analyse this little episode. I hold that there is here reference at, say, three emergent levels. There is top-level *reflective reference* to Browning's poem and much else; there is mid-level *cognitive reference* to the thrush that I expected to see

before I actually saw him in the lime-tree; there is the initial *non-cognitive reference* that accompanied the cochlear pattern in the internal ear before matters went any further. This, in our adult life, is so masked by higher level reference that it is presupposed rather than disclosed by analysis. It is the starting-point of all reference.

Let us concentrate attention on the mid-level of cognitive reference. My leaning forward and turning my gaze to the tree-top, with expectation of seeing the thrush as I had seen him before, affords an instance of guidance in act. Such direction of behaviour with an accompanying mental factor of guidance comes into the field of personal experience and of inference coincidently with prospective reference (prevision) and some foretaste in enjoyment. This implies revival; it does not necessarily imply retrospective reference. What seems essential is some mental forewarning in the light of which behaviour may be such as to forestall the coming event.

Such in brief is the nature of guidance in the two-fold story I advocate. I can, at present, only give to it tentative expression. Where some immediately precedent determinant of direction in the one story is accompanied by prospective reference in the other story, there is, in the two-fold story, something emergently new—namely, guidance. The future is not yet; we can only deal with it in terms of probability based on our knowledge of routine. When there is prospective reference, a new factor is introduced into the formula in terms of which the probability is evaluated.

On this showing, the advent of guidance marks a

critical stage in the ascending evolution of reference. Since this evolution is concomitant with that of physiological processes, every item gained through behaviourist treatment is in place within the life-story. But in so far as the *radical* behaviourist finds no evidence for a mind-story, I part company with him ; and in so far as I, on my part, find no evidence for a disparate realm of mental being, I part company with the animist.

To come back, then, to our bean, starfish, and elver, the question arises : Is there guidance under cognitive reference ? As a matter of opinion, after weighing the evidence to the best of my ability, I hold that there is, even in the elver, no such guidance in respect of the behaviour *regarded as a whole*, though there may be guidance in the details within one link in the chain of episodes. In other words, an interpretation in terms of an enchained series of acts having direction to an outcome, but without cognitive provision of the next link in the chain, is, as I think, adequate and sufficient. That is why I have grouped them together as lower forms of behaviour.

It must, however, be realised that any of these lower forms of behaviour, even in plants, *can be* interpreted in terms of cognitive reference if we credit the being that behaves with prevision of that which is coming in the course of normal routine. And if it be held that there is in the mind of that being a mental plan of the routine, and that he " recognises " that the next step to be taken *in act* shall be such as will accord with the next step *in the anticipatory plan in mind*, the whole procedure can

be interpreted in terms of reflective reference. Where, as not infrequently happens, there are different acts in what we judge to be the same pressing situation, an interpretation in reflective terms is based on the inference that this or that act is the visible expression of a choice of alternatives. There are different plans in mind by which, through translation into act, a " difficult " situation may be met. First this plan, then that, is put to the practical test in the hope that if this fail, that, or another, will lead to a solution of the difficulty that the situation presents. This is the reflective method of trial and error.

But the same expression " trial and error " is used to designate types of behaviour in respect of which an interpretation is offered in other than reflective terms. I have myself used it in this sense ; and in this sense it is applicable, not only to behaviour which is accompanied by cognitive reference, but to the lower forms of behaviour also. Thus Dr Jennings says that " in no other group of organisms does the method of trial and error so completely dominate behaviour, perhaps, as in the infusoria."

The trumpet-shaped ciliate Stentor attaches to some support and forms a gelatinous sheath or tube into which the organism can be withdrawn. A wreath of cilia bounds the peristome of the trumpet, at the inner end of which lies the mouth. Ciliary action in this wreath gives rise to an inwardly directed vortex current of the water. Under experimental conditions carmine particles are suspended in the water.

The plain tale of behaviour runs thus. At first the extended Stentor does not respond at all. After stimulation has continued for a short time, the organism responds by turning this way or that. Then, after several repetitions of this reaction, there is a new response—reversal of the ciliary action. Next, the Stentor contracts strongly and repeatedly, does so still more markedly, and finally breaks the attachment to the tube, and swims off.

Turn now to the interpretation that Dr Jennings offers. One may, I think, put it schematically thus. The organism is set in a field of constant and continuing physical influence. On first reception of this influence there is no observable outcome. The organism is still in its normal physiological state *a*, and exhibits its normal behaviour *a'*. After a while the physical influence induces a different physiological state *b*, of which a different form of behaviour *b'* is the expression. Later the continued physical influence, partly through its cumulative effect, and partly, perhaps, through some biochemical product of behaving *b'*-wise, induces a third physiological state *c*, which is expressed in a new form of behaviour *c'*. Then, through further cumulative effect of the physical influence, and perhaps through behaving *c'*-fashion, there is a fourth physiological state *d*, which is expressed in yet another form of behaviour *d'* ; and so on.

This purports to be a physiological life-story in terms of stimulation and response, with successive changes of poise in the organism. With each change of poise there comes a form of behaviour.

Dr Jennings would not, as I understand, deny that

there are or may be mental accompaniments of the several physiological states. But, speaking of the reactions, he says : " If they are preceded or accompanied by a common physiological state, this will serve formally as an explanation of the common reaction fully as well as would a common state of consciousness."

It seems open to us, then, to interpret trial and error *of this kind* as affording no evidence of guidance with prospective reference.

§ 10. *Trial and Error under Canon of Emergent Interpretation*

At the emergent level of mind where reference is not only cognitive but is also reflective, there is, in its distinctively human form, an end in view ; there is endeavour to reach it by some means ; there is the quality of enjoyment we call satisfaction when it is attained.

What is this end in view ? In us it is highly complex. In brief it is, so to speak, a binocular or stereoscopic combination or synthesis of two ends —sometimes analytically distinguished as practical and theoretic. The theoretic end is an anticipatory plan in idea or "schema" which shall enable us to interpret events. The practical end is guidance in executive action or conduct in some concrete situation. What one wants is a better plan in mind as a guide to action, and better action as contributing to a more adequate plan in mind. Each furthers the advance of the other. Synthetic or "substantial" development of both together is the end

in view in that which we commonly speak of as rational procedure.

At this level of reflective reference—which the child may have reached at the age of, say, three years—methodical trial and error with fully conscious intent plays a leading part. Recall Professor Dewey's characterisation of "how we think." A difficulty in some problem or in some practical situation is at first rather vaguely "felt"; its locus is defined; a way out of the difficulty is suggested; this clue is focussed and elaborated in thought; then it is tested in combined plan in mind and execution in act. There results a Yes or No attitude of, perhaps, provisional acceptance or rejection, with the joy or sadness in success or failure. Reflective trial and error is contributory throughout.

At the mid-level or cognitive stage of the evolution of reference there is what may also, as we have seen, be spoken of as trial and error. In a difficult situation a way out is *found*; but it is not *sought* with reflective reference in accordance with some such schema as that which Professor Dewey regards as typical in thought. The animal has learned to act in a number of ways which have been endorsed by success—ways which seem to justify the inference that there is in the mind-story prospective reference to, and expectation of, what is coming in the outcome, but has not yet come in this current instance of the normal routine of action. It has come on previous occasions though it has not yet come on this occasion. But this difficult situation is new and more or less off the line of routine. That is why we speak of it as presenting a difficulty. It seems

that a way out of it is hit upon by trying, unreflectively, now this, now that, and now another of the normal modes of behaving. One of them succeeds. But it is only a chance hit. When the animal is replaced in a like situation he begins his series of random trials all over again. The proportion of misses to a hit may be less than before ; but it may be greater. Very gradually do the hits on prior occasions carry prospective reference and guidance with increasing expectation of success on this occasion. There does not seem to be that conjoined development of anticipatory plan in mind and executive behaviour that contributes to what I spoke of as a binocular or stereoscopic end in view, which characterises reflective procedure of the rational order. In other words, it seems that the value of the hits for a guiding fore-plan, and the value of such a fore-plan for increasing the soonness and accuracy of a hit, have not as yet emerged at this stage of mental development. The learning of a child in, say the third or fourth month, well illustrates trial and error of this kind.

Does the Stentor learn on this wise ? Dr Jennings, as I understand, thinks not. Indeed the characteristic feature of trial and error at this bottom-level is that there is little or no evidence of its being learnt in cognitive fashion during the course of individual life. The successive acts are acquired only in the sense that they just come with the coming of a change in the physiological poise. Changes in enjoyment accompanying these physiological changes there may be. Non-cognitive reference, correlative with influence received here

and now, there may be. Nay more, on my hypothesis such enjoyment and such reference there are. But they constitute all the stuff in substantial unity there is as subject-matter of a mind-story in Stentor. Of prospective reference there is, I think, here no evidence. There is no guidance of behaviour under trial and error of this lowly kind.

It may perhaps be said that it can only lead to ambiguity if we continue to use the same expression " trial and error " with such obvious differences as are entailed at the three levels I have sought to distinguish on a two-story hypothesis. But revert to plain-tale treatment:

(1) We watch a boy grappling with one of the familiar wire-puzzles. He tries three failure-noes perhaps several times, and presently the one yes-success. Thereafter he makes straight for the yes-line, perhaps twice or thrice—then throws the puzzle aside as of no further interest. (2) We watch a cat in one of Professor Thorndike's cages. The animal repeatedly tries three failure-noes, and presently the one line of yes-success. But thereafter he does not make straight for this yes-line. It takes him quite a number of renewed trials along the old no-lines on many subsequent occasions before he consistently behaves yes-wards. (3) We watch the Stentor. It acts successively along three lines which we label No, and in due course along a fourth line which we label Yes.

Remember that we are here trying to tell a plain tale in terms of no more than observable circumstances, observable behaviour, and observable outcome. As reflective folk we concentrate attention

on the outcome, and perhaps also on its utility. The immediate outcome in (1) is detachment of the ring from its frame. In (2) it is the securing of a bit of fish outside the cage. In (3) it is what we regard as escape. From the frankly plain-tale standpoint (difficult no doubt to preserve) it does seem justifiable to speak in each case of trial along four lines of action, error along three, and success only along the yes-line.

But when we pass to interpretation the observable differences in (1), (2), and (3) demand careful consideration. And the question then arises: Is *the interpretation of trial and error* in all cases the same? The radical behaviourist may say, Yes it is; and (3) affords the clue. The animist on his part may say, Yes it is; and (1) affords the clue.

For the former there is no mind-story, so *that* for him is out of count. On our hypothesis plain-tale trial and error may best be interpreted differently at the three levels I have distinguished in the mind-story as I read it. But since that which is observed at the bottom level *can* be interpreted in top-level terms, why should it *not* be thus interpreted? Some say that it *should* be. What do we mean when we submit that it *should not?* We mean that this interpretation is not in accordance with our emergent schema. "Should" or "should not" depends on the hypothesis which is accepted as a policy.

Some thirty years ago I accepted as part of my policy in comparative psychology a rule which I may here restate. In no instance should we interpret an act as the outcome of a higher mental process if it can adequately be interpreted as the outcome

of a process that stands lower in the psychological scale.

In the light of emergent evolution this policy and the canon which it implies may be extended in range. In no instance should we interpret events in terms of concepts appropriate to a higher level of emergence if they can adequately be interpreted in terms of concepts appropriate to a lower level of emergence.

If this policy be accepted we should not interpret the lower forms of trial and error as affording evidence of trial and error of the kind that characterises reflective procedure.

LECTURE III

Life as Emergent

§ 11. *Substantial and Determinate Plans*

As a matter of direct observation, and under such reflective treatment as enables the observer to furnish a descriptive plain tale, this, that, or the other set of events, which affords subject-matter for special inquiry, runs its course on a plan—not infrequently in a routine with recurrent phases. The subsistent plan or the routine—this, that, or the other—is a plain-tale inference from the several instances which are directly observed. But the whole business of *interpretation*, even of the plainest of plain tales, is reflective to the core. It betokens for us the emergence of what, broadly speaking, we may call the stage of rational thought. Interpretation seems, on the available evidence, to be distinctive of man.

We have, then, in each selected example of plan or of routine, to deal with a changing course of events, and we ask: How does reflective thought help us so to deal with such change as falls under direct observation? As the outcome of prolonged reflective thought, there has come into view a distinction which appears to be of wide and general import. It is that between the intrinsic or immanent ground

of change and the extrinsic or transeunt conditions of change (cf. *Emergent Evolution*, § XLVIII).

It seems that in any integral system, set in a field of physical influence, the course of events in that system is partly intrinsically *determinate* from within, and partly extrinsically *determined* from without. Thus the behaviour of an organism in relation to an external situation is in some measure determinate in virtue of the physiological poise of the time-being, and in some measure determined through the incidence of some stimulating influence. In what measure one or the other, we have so far as is possible to ascertain in each given instance. But, in principle, this is " common form " throughout nature. There is, moreover, always reciprocal interplay. Under the transeunt conditions of physical influence the ground of change is itself changed ; and this change of the ground of change is retained in accordance with a principle that is no less " common form " throughout nature—that which may be called persistence (cf. *Emergent Evolution*, p. 132). Change and persistence are limiting concepts for reflective thought and are of service in all our discussions of the becoming and the being which are given together in the onward course of events.

Furthermore, in so far as the system or entity reacts on other entities, it is a source of physical influence on them. The story of life-behaviour, and indeed of all life-action, is, from first to last, but a variant of this universal theme. But in the progressive story of ascending grades there is increasing emphasis on the determinate ground of action. As we commonly realise the higher we get in the scale

of life, more and more does the behaviour and organisation of a living entity depend on *what it is*, less and less is current action determined by the circumstances of the current time-being.

And, on our hypothesis, what an organism is, that it is no less in mental regard than in physical and physiological regard. Could we but learn to read it, there is always, under duality of nature, a mind-story of intrinsic enjoyment accompanying every changing phase of physiological poise throughout the persistent being of the organism ; there is also the further mind-story of extrinsic reference, correlative with influence received from without.

But in life-regard the highest of known organisms starts on its individual life-history from the fertilised ovum. There is, in plain tale, embryonic and later development on a plan or routine of events. This plain tale is fairly well known. Tentatively at least a physiological story can be told in analytic terms of " stimulus and response." The plain tale, thus supplemented by physiological interpretation, is behaviouristic in the broad sense. We believe, however, that there is a mind-story. At a stage of the individual life-story that we are beginning to descry, reference, thus far non-cognitive as I phrase it, becomes cognitive and prospective—just how we shall have to consider. At a far later stage it passes to the much higher reflective level. That it does so you and I here and now stand as reflective witnesses. *This* story is other than radically behaviouristic. It tells not only of action under influence, but of purely mental fields of reference.

For us, then, there is, under the given duality of

nature, a two-fold story of the same course of events in development. And at a critical stage of this two-fold story there comes with the advent of prospective reference—and not before—guidance in a sense of this word which seems consonant with inference from observation. But this critical turning-point in the two-fold story occurs quite late in the evolutionary advance of the storied events. On our canon of emergent interpretation, therefore, the guidance it implies should not be accepted at a stage of evolution, or of individual development, prior to the advent of prospective reference.

In this lecture we are concerned with plans of development prior to its advent. We may not introduce cognitive guidance—still less reflective guidance—until interpretation without it seems to us to be inadequate. But quite early in human life—and in many episodes of animal life—such interpretation without it seems to me to be wholly inadequate. That is where I part company with the radical behaviourist. None the less a wide range of instances of whole-action behaviour and a still wider range of life-organisation can, and on our principles should, be interpreted without introducing the concept of guidance.

There is, we think, no more call to invoke guidance in our sense of the word—that which implies prospective reference—where the substantial and determinate plan of organisation in a living plant or animal is the subject-matter of inquiry, than there is where integral entities of far lower emergent status are under consideration.

In any integral entity living or lifeless, what I

speak of as substance and stuff may be distinguished. Under a different terminology they together constitute the *whole*, while the items of stuff, severally regarded, are the *parts* within the whole. On this understanding the part is what it is only in substantial relation to other parts within the whole; and the whole is what it is only in virtue of the substantial relation of its parts. Cut out any integral part, or even render it different, and the integral whole is no longer the same entity that it was, though more or less substantial likeness may persist. This is profoundly true of the living entity. In the organism whole and parts change hand in hand so long as life persists—that is, so long as this example of substantial plan persists. This is worthy of all the repeated emphasis it receives. But I contend that it is simply untrue to the facts to say that this is a criterion that serves in principle to distinguish living organisms from all lower integral entities. It is every whit as true in principle of the atom, of the molecule, of the crystal unit. That, too, in each case, is not only the additive sum of its parts. In that, too, whole and parts co-operate to constitute one natural cluster of events. In that, too, as I put it, there is substantial unity indivisible and pervasive of the entity. One is not denying the greater complexity and multiplicity of items of stuff or the enhanced richness of substance in the organism. That, for us, would be to deny its specific emergent status. I do venture to deny the time-honoured assertion that we have here something that distinguishes the living entity in a sense utterly different from the something that

distinguishes the crystal unit from the molecule. It probably arose through the tendency to compare organisms *as integral entities* with *merely resultant aggregates* in the inorganic realm.

If, in the inorganic realm, we deal with integral entities, there seem to be, according to Sir William Bragg (Brit. Assoc., Toronto, 1924),

> "three types of assemblages of matter. The simplest is that of the single atom, as in helium in the gaseous state, in which the behaviour of every atom is on the whole the same as the behaviour of any other. The next is that of the molecule, the smallest portion of a liquid or gas which has all the properties of the whole; and, lastly, the crystal unit, the smallest portion of a crystal (really the simplest form of a solid substance) which has all the properties of the crystal. There are atoms of silicon and of oxygen; there is a molecule of silicon dioxide, and a crystal unit of quartz containing three molecules of silicon dioxide. The separate atoms of silicon and oxygen are not silicon dioxide; in the same way the molecule of silicon dioxide is not quartz. The crystal unit, consisting of three molecules arranged in a particular way, is quartz."

Here we have an ascending hierarchy. On the first level, proton and electrons as items of stuff go together on a determinate plan in substantial unity. On the second level, the items of stuff are the atoms evolved at the first level. They go together on a new determinate plan, one in substance. On the third level, the items of stuff are the molecules

evolved at the second level. They go together (are "arranged in a particular way") in a still richer mode of substantial unity. Furthermore, in each case the new entity has new intrinsic qualities, and new extrinsic properties in relation to other entities.

Such is the nature of emergent evolution in the inorganic realm. It is a far cry to the living entity which stands on a specialised line of evolutionary advance. Here certain primitive events of what we call the physiological order—the bioses—are the new items of stuff. Do they go together on a new and distinctive plan, substantial and determinate? Does this plan fall within the comprehensive plan of emergent evolution?

§ 12. *Mechanism and Monadism*

May one say that recent inquiry within the realm of inorganic events has thrown much light on their mechanism? This is often said. What does it mean? I find it difficult to say. I think it may mean something quite different in accordance with the context in which it is used. But there must be something in common to the use of the same word in more than one context.

Clerk Maxwell, when a boy, was wont to ask of everything: "What's the go o' that?" Nor was he content with a vague reply, but would reiterate, "But what's the *particular* go of it?" There is, I think, a sense in which answers to what we picturesquely call nature's questions in terms of "particular go" may be regarded as answers in terms of "the mechanism." When we learn in detail the

steps subordinate to the reaching of some observed outcome, we have so far gained knowledge of the natural mechanism. It may be some factor which has hitherto been overlooked.

There is, for example, an older and a newer interpretation of the process of " sedimentation " in an estuary. Particles ranging from coarse sand to fine silt fall at different rates. In the older interpretation, put crudely, the rate of fall could be calculated if the weight and the size of the particles were given. But the facts of observation were found not quite to accord with calculation based on such purely resultant treatment. Professor Joly has now shown that we must reckon with " ionisation " as a factor. May we say that the mechanism of sedimentation is thereby better understood ? If so, have we anything more in principle than a better, fuller, and more detailed interpretation of the course of events on some determinate plan, itself better known ? When we say, as often enough we have to say, that this or that course of events is such and such, but that the exact mechanism is not at present known, do we not mean that the whole determinate plan of these events has not yet been discovered ?

There seems to be a determinate plan of the uranium atom, of its dissociation, perhaps of its evolutionary history. In each case we may ask : What is the mechanism ? In each case the answer is given in so far as the whole sequence of intervenient events between this phase and that can be set forth in due order. I take it that if it be shown that a molecular stage always intervenes between that

of atomic constitution and that of the evolution of the crystal unit, Sir William Bragg indicates an important feature in the mechanism of crystal production. But the heart of the matter is determinate plan.

If now we pass from the not-living to the living, and if we regard the course of events in the living entity as affording instances of some determinate plan, the intervening steps within that plan are conveniently earmarked as the mechanism in terms of which the observed outcome may be interpreted. From the evolutionary point of view we search for as simple an illustration as we can find.

Take, then, this condensed statement of Dr E. J. Allen's summary of Dr Wager's observations on Euglena.

> "In a very crowded culture the organisms aggregate into clusters beneath the surface-film. The flagella then cease to work, and the cluster sinks to the bottom. Thus the individuals are spread out by the action of the downward current, and when they are sufficiently wide apart, the flagella again begin to move, carrying the organisms in a more diffuse stream to the surface. If the conditions be kept uniform, a circulation of Euglenas, falling to the bottom by gravity when the flagella are stopped, and returning to the surface under flagellate action, will continue for days."

Now we may speak of flagellate action as the mechanism for return to the surface. But this action alternately stops and starts again. What is the mechanism here? In plain tale it is correlated with crowding and scattering. To account for

this correlation we may pass to interpretation in terms of physiological poise. Then what is the mechanism? By what kind of stimulation is this change of poise in part at least determined? Further questions arise. But two major questions stand out in salient emphasis. (1) Does an interpretation under a purely inorganic (physico-chemical) formula cover all the observed facts? (2) Should we interpret in terms of cognitive reference with conscious endeavour to reach the surface or the bottom? Our answers are: (1) we cannot adequately interpret the plain tale save on the hypothesis of life-emergence; (2) we should not interpret in terms of cognitive reference since a lower level interpretation seems to us to be adequate.

It follows that our concept of mechanism is not restricted to the inorganic realm. It may, on the evidence, be coterminous with the whole range of life. But *for us* it is a concept that has validity only in respect of interpretation in terms of influence and action—not in respect of mental reference. No doubt *for others* it is permissible to speak of the mechanism of dreams, of thought, of memory, and so forth. It is for them to state clearly what this means on their hypothesis.

I have now given my rendering of the current use of the word "mechanism" in alliance with determinate plans of influence and action—for us interpreted under duality of nature, but not necessarily so interpreted. But there is an older and quite different usage of the word. Here the emphasis falls on some practical end to be reached by human endeavour; and here the mechanism is some

selected means to that end through the intentional "harnessing of the forces of nature." Broadly speaking the mechanism in this sense means "of or belonging to a machine." A machine is a more or less elaborate tool *instrumental to the fulfilment of some human purpose.* Mechanism on this usage always implies design; and the clearest examples of design are seen in human purpose.

I need not enlarge on this concept, of which few men with any historic sense will speak with disrespect, whatever modification their attitude to "the argument to design" other than human design may have undergone. It suffices to lay stress on the difference of this meaning of mechanism from that of the word as it occurs in the writings of modern men of science—those, for example, who interpret Mendelian inheritance in terms of the mechanism of chromosome partition. For them the mechanism falls within a determinate plan; for those who speak in terms of the older usage it *may* mean the free and indeterminate choice of the suitable "motor mechanism" to be utilised to the ends of purpose in a disparate realm of being.

The animistic position is not only dualistic but pluralistic. The Euglena, or other organism as an instance of a living being, *is* an anima and *uses* a mechanism. This mechanism, as such, is taken over from inanimate nature and made subservient to the end in view, which is distinctive of the anima as such. So many organisms—myriads of them in a pluralistic world—so many animate centres, each with its ends which it strives to realise through the endeavour which is the hall-mark of the living being.

I know how hard it is to define clearly what one means by " real." One may soon be " embrangled in difficulties " as to " levels of reality," or in some sense the more and the less real. But I take it that for the animist the mechanism is no less real, after its kind, than is, after its kind, the anima that uses the mechanism.

There is, however, a modern tendency to invoke the philosophical doctrine of monadism in support of what otherwise purports to be animism. But a distinctive feature of monadism is that mechanism *has no foundation in reality*. What is a monad? It is (*a*) an intuitive centre of " activity " in the sense of mental urge or horme; (*b*) characterised by illimitable " memory " in which the past still *is* in " duration " ; (*c*) having " expression " in " image " proceeding forth from the monadic centre and giving " perspective " ; (*d*) taking lines of " action " in accordance with its inherent nature *qua* monad.

On this theory what the animist speaks of as mechanism has no independent reality—no reality apart from monadic perception. Its claim to such reality is based on the notion that there are physical things that can act and react. But so-called physical things have being only in the realm of abstraction. The world of natural science—that with which the physicist purports to deal—has only fictitious reality. Apart from the " activity " of the observer which is a factor in what we call physical fact, there are no such independent entities as atoms. " When we view reality as atoms we are taking an abstract view."

Hence the concept of physical influence which

mechanism implies has no reference to that which is veritably real. If such reference be retained by the animist, he ceases to be a monadist; for "the monadic theory is that anything which is a thing-in-itself is a monad. Only in the meaning that it is a subject of activity with its own point of view can a thing be real, and only when so considered is it a monad. So that whatever is real in the universe is referred to the monads, for they are the only reals" (Wildon Carr, *Theory of Monads*, p. 333).

§ 13. *The Natural Origin of the Living*

A question that bulked large half a century and more ago was that which was raised by the alleged appearance of living beings under circumstances where living precursors were demonstrably absent. For his Presidential Address to the British Association (1870) Huxley chose as his theme "Biogenesis and Abiogenesis." Tyndall, in 1878, rediscussed the matter under the more familiar heading "Spontaneous Generation." Notwithstanding some few dissentient voices the verdict was for biogenesis. Surveying the progress of science in 1886 Huxley said: "Those who take a monistic view of the physical world may fairly hold abiogenesis as a pious opinion, supported by analogy and defended by our ignorance. But as matters now stand . . . no claim to biological nationality is valid except birth."

What was here the issue under discussion? It was the frankly plain-tale question: Is there evidence of the passage from the not-living to some living organism? The plain-tale answer then was: No

such evidence has so far been adduced as will stand the test of scientific criticism. And what is our present-day attitude? I think our answer is still the same. Of plain-tale evidence based on direct observation there is none.

If this be so it may well be asked: Since there is admittedly no plain tale to be interpreted in accordance with the methods of science, why waste time and thought over a purely speculative problem? We are well acquainted with the passage from the living to the not-living. That is given in myriads of plain-tale instances. In not one accredited instance is passage from the not-living to the living given in plain tale. Is it worth while to discuss at length and in detail how a barely possible "might be" might be possibly interpreted?

Huxley, in 1886, spoke of the pious opinion that life has been evolved; and he regarded it as one that is supported by analogy and defended by our ignorance. From sundry passages in his writings one may gather that, as a pious opinion, he himself did not view it with antipathy. But he held that the scientific attitude should be non-committal and agnostic. That was consonant with what many of us regard as sound policy.

Let us, however, give to "supported by analogy" and to "defended by our ignorance" a little more detailed expression. May we, in 1925, find some analogy in the fascinating story of radium? We know something of its atomic structure, that is, of the determinate plan on which its items of stuff so go together in substantial unity as to constitute what the man of science speaks of as the kind of

" substance " that it is. We start with it in the full integrity of its being. No one has observed its evolutionary genesis. If we hold the pious opinion that somewhere and somewhen there was a natural becoming of the radium atom, this may be supported by analogy, but of this we are at present ignorant. The story that we can in some measure read is restricted to the observable process of dissolution. It is not for me to retell the story—how the atom of radium " spontaneously " disrupts, by what transmutations it passes lead-wards, and so forth. Is not all this recounted in the book of the chronicles of science ?

May one summarise the position thus ? We find the radium atom in being as an elaborately wound-up concern, with a manner of go on a determinate plan. Of its evolution we know nothing on the basis of direct observation. Of its dissolution we know much and we hope to learn more. Let us stick to inquiries as to what is actually going on in nature. Let us leave to arm-chair philosophers all speculation as to what may have been a process of evolution under conditions of which we know nothing. There may have been a process of natural genesis, or there may not, we must leave it at that. As a matter of analogy—if analogy there be—the living organism may be, like the radium atom, an entity of which we know the being and the undoing, but of the becoming of which we are wholly ignorant.

If, in further search for analogies, we pass from some selected member of the atomic series to some instance of molecular substance, we find evidence of ascending evolutionary process as well as of

descending process of dissolution. A story can be told on the basis of observation not only of the unbuilding but of the building of many molecules. Does this affect the position? Assuredly it does. Evolutionary upbuilding is here given in plain tale. It is not here a matter of arm-chair speculation. It is something given in nature which calls for scientific interpretation no less than processes of dissolution which are also given.

Much stress used to be laid on the alleged plain-tale fact that only within the living organism are certain very complex molecular substances given in nature. There only, it was said, and not elsewhere, are they built up. But many such substances normally evolved within the organism can now be produced in the laboratory. Of them an evolutionary plain tale may be chronicled under experimental conditions. The task of the man of science has been to discover a series of steps in the process of upbuilding, though this, that, or the other step may not be reached in the same way as it is reached in the living organism.

We have, however, to give due stress to the negative outcome of direct observation up to date. No living being has been produced under laboratory conditions or has been seen to arise *de novo* and not *ab ovo*. There is as yet no plain tale of the passage from the not-living to the living.

Does it follow that there never has been such a plain tale—perhaps under conditions in the past history of our planet which cannot be reproduced in the laboratory? Surely an assertion that it has not taken place is insecurely based, and should be

replaced by the more modest statement that we do not know and, it may be, that, from the irretrievable pastness of the event, we can never know. Living entities, like radium atoms, are here in our midst. Of course we may want to know how they got here ; but as yet we know not. It is here, I think, that " defended by our ignorance "—if this rather ambiguous expression is defensible—is in place. With respect to " supported by analogy " one must ask what this means. It may mean, as it frankly and avowedly does for us, " in accordance with the naturalistic hypothesis of evolution," emergent or other. But if the animist say—as on his hypothesis he has every right to say—that between mechanism and life there can be no valid analogy, it is clear that any so-called support which molecular up-building may suggest is utterly vain and illusory. Nor if a plain tale of origin by natural passage should be told to-morrow would the position be one whit altered. It would be claimed that we have disclosed only the mechanism. The anima would still be needed to use this passive mechanism in active endeavour to achieve its ends.

Our theme is determinate natural plans with subservient mechanism. We urge that in the organism there is such a determinate plan. We urge that this plan is predicable of the organism as a whole, that is, subject to the concept of discrete items of stuff which go together in the substantial unity of organisation. We urge—fully realising that there are those who dissent—that, in the organism, there is a manner of go in the current events which is special to, and distinctive of, the living being as such.

That is what I mean by the emergence of life. We urge that, if life be emergent, there has been a sequence of steps which, in physical regard, is the mechanism of the passage from the not-living to the living. We urge that on the basis of this hypothesis scientific inquiry is faced by an unsolved problem. If this problem be still defended by our ignorance here as elsewhere, the aim of science is to break down the defence by shot and shell from the armoury of knowledge.

How, then, does the trained expert approach the unsolved problem? Piecemeal and in detail; by dealing with this step and that step severally, applying to each the methods which have proved serviceable in overcoming allied problems.

It would serve no good purpose for me to try to summarise the present position—were I adequately equipped for the task. The topic bristles with technical points. The colloidal arrangement of molecules in a physical substratum, the formation of formaldehyde, polymerisation with production of hexose, ionisation and adsorption, the office of photocatalysts, nitrite and nitrate formation, the salient feature of metabolic balance, the establishment of physiological gradients—what does all this mean for those who are non-experts? If much of its meaning be hidden, it signifies, at least, converging lines of scientific inquiry as contrasted with arm-chair speculation.

What then is the upshot? It appears that, although a complete chain of steps cannot be described as the outcome of laboratory work, still many of the "links" in such a chain are coming

piecemeal within the ken of the patient inquirer. (*Cf.* Chapter on Biology, p. 113, in *Evolution in the Light of Modern Science.*)

§ 14. *Concerning the Life-Plan*

Whatever may have been the evolutionary steps of its becoming, a determinate life-plan is in being. I here speak of a life-plan in the same general sense as one may now speak of the plan of the atom, of the molecule, of the crystal unit, or of the colloidal entity. In each case it is a comprehensive plan of a typical or common arrangement—a fluent going together of distinguishable items of stuff in a distinctive mode of substantial unity. Instances of this or that typical or "universal" plan are many and various. But each type of plan has subsistence for reflective thought as the outcome of the evolution of reference and as constitutive of that which is objective under such reference.

Taking, then, organisms as they now are, and comparing them with lifeless entities, do the physical and chemical events in the former run their course with a difference other than that of added complexity only? Is there amid all its varied expression a determinate plan *distinctive of a living being* as such—one that has a higher emergent status than is exemplified in any instance of a lower determinate plan in the inorganic realm? That a life-plan has a higher emergent status is central in our hypothesis. According to that hypothesis events do run their course with a difference that has manifold expression.

But apart from this question of emergence—apart,

that is, from the question whether purely physico-chemical treatment suffices for the interpretation of all action and reaction when living beings are within a field of influence—one must ask: What are the leading features that distinguish living from not-living entities? Is there some one characteristic of an organism that may be singled out for special emphasis?

Huxley said that "no claim to biological nationality is valid except birth." The statement connecting "nationality" and "birth" is no doubt picturesque. Reduced to biological plain tale it comes to this. Precedent to any given entity that has the status of a living being there is always, as things now are, an entity that has like status. If we deal thus with living things in terms of "precedent" and "consequent," there is an inferable mode of relatedness between one and the other which we speak of as *heredity*. It may not be easy to say concisely what is central in the concept of heredity. But I take it that in any plain-tale statement it need not imply aught that is not given under direct observation and such inference as gives substantial unity to even the plainest of plain tales as it is told by a reflective person.

I think it may be said that in modern biology heredity is singled out for special emphasis as *the* characteristic feature of life in respect to an observable and inferable relatedness between precedent and consequent life-entities in accordance with a determinate plan along some given line of filiation. What these life-entities are—whether whole organisms, organs, tissues, cells, nuclei, chromosome-

factors, and so forth—needs, of course, to be stated, or at least made clear from the context. If we keep substantial unity steadily in view as the dominant concept, any item of stuff on its line—and it is always on some line of affiliation—may analytically be regarded as a life-entity which, when we come down to chromosome-elements, to chondriosomes and the like, arises through the partition—equi-partition in some cases, but often unequi-partition—of a precedent life-entity of like order. It is essential, however, no matter how far analysis into items of stuff may be pushed, to bear in mind that these several "factors" go together in the substantial unity of this or that living organism as a whole.

Under this emphasis on heredity as a feature distinctive of the living, there are many biologists who concentrate inquiry on "the doctrine of descent," and for whom evolution—thus overtly or tacitly restricted to organic evolution—is the subject-matter of this inquiry. Darwin dealt with the origin of species through progressive, and sometimes retrogressive, adaptation, under such variation as is given in plain tale. He did not use the word "evolution." Nowadays we use it freely—perhaps too freely. And since there are some half-dozen current definitions of evolution, it is open to anyone to select that which seems to him best, so long as he states clearly what he means whenever he uses the word, and so long as he allows to others full freedom to use it in one or another of the current senses, duly indicated. My own definition is, I trust, sufficiently clear.

Now I submit that any discussion of heredity,

evolutionary or other, starts, or I make bold to say should start, with plain-tale treatment. This or that organism has, as a matter of observation, such and such "hereditary characters." There is some relation disclosed in plain tale between these characters and those of parents and ancestors. The characters of some mature organism are, let us say, susceptible of Mendelian analysis. A man may be tall, brown-eyed, curly-haired, narrow-browed, and so forth. These may be regarded as several items of physical character-stuff which go together in the substantial unity of his bodily make-up. He stands, however, on a line of filiated descent; and the manner in which his unit-characters as items of stuff go together may be compared with what is given in precedent organisms on the line of descent. All this may be subject-matter of discussion in frankly plain-tale treatment with the aid of statistical method.

But the modern inquirer does not rest content with *this* plain tale. He finds that *another* plain tale may be correlated with this one. This other plain tale deals, let us say, with mitosis and chromosome distribution. The concept of mechanism is now in place and is freely used in the field of genetic inquiry.

Now when one plain tale is of service in reading another plain tale there is a step towards the interpretation of each in the light afforded by acquaintance with the other. Both now contribute to our reflective grasp of a determinate plan which is common to the diverse expression of one set of natural events.

But the physiologist, as such, has *his* plain tale in terms, broadly speaking, of stimulation and response, so far as this can at present be told. I venture to think that in the field of genetics this presents what is still in large measure an unsolved problem, at any rate with regard to intimacy of detail. But, if this be so, what of that? Is not the man of science one who is trained in some method of attack to go forward with his fellows, trained in other methods, to the conquest of those citadels of ignorance which are unsolved problems many and various?

I have harped on a plain tale and an interpretative schema. The plain tale is frankly descriptive, though it is reflectively generalised, in that what is given for observation in some current routine is taken as an instance of a tale that is exemplified also in other like instances. It may, however, be said that an interpretative schema is after all on this showing a complex of so-called plain tales. That in a measure is so. If I may revert to the ruling concept of substance, each several plain tale affords its item of stuff which is tied with other items in the substantial unity of the schema. And this schema is an emergent outcome of the evolution of reference. A comprehensive naturalistic schema is the joint outcome of the two-fold story of physical influence and of mental reference under the foundational duality of nature.

It will, no doubt, still be said that a naturalistic schema, combining in synthesis all relevant and correlated plain tales is at bottom no less descriptive than any one of the several plain tales. Again,

au fond, that is so. It makes no pretence to be anything else. Whereon it will be said that it is no valid interpretation or explanation.

There are some who use the word " interpretation," others who use the word " explanation " for the reflective outcome of schematic treatment on the lines I have indicated. I think men of science use them alternatively. I have tried to keep consistently to the one word " interpretation " for the process and the product of scientific schematisation. I should therefore speak not of an interpretation, but of an explanation in terms of monadic or of hormic activity which I regard as a non-scientific concept. But Professor Wildon Carr's usage is different. Hence he says: " Science does not interpret reality ; it describes, classifies, and systematises it " ; and again : " the science of naturalism has no interpretative principle " (*Monads*, pp. 183, 312).

It is, I think, worth while to draw attention to this difference of usage which to the lay reader is a source of no little perplexity. What should be grasped is that, whichever word be used, the difference lies in this—that the one is professedly naturalistic and the other is professedly nothing of the sort.

Here and now I am concerned to defend the naturalistic position, without prejudice to the further question whether an emergent plan of advance in all natural events—I lay stress on *all*—itself stands in need of explanation, let us say in terms of Divine Purpose.

A further question is this : If within the compre-

hensive plan of evolutionary advance there be multifarious instances of a determinate life-plan, are there when life is emergent new "forces" or new "modes of energy?"

Take two examples of what is observable in plain tale—the describable changes that occur in karyokinesis or mitosis, and those which are seen in the embryonic development of many multicellular animals that pass through blastula and gastrula stages. I need not in either case recount a plain tale that is familiar in outline. If we seek to correlate this one or that with phases of action and reaction in terms of physical rather than plain-tale descriptive treatment, have we to reckon with new "forces" or new "modes of energy?" Shall we follow Marcus Hartog in speaking of a new force (mitokinetic) in karyokinesis? Shall we follow Asheton in regarding invagination as due to a new form of energy?

Now there has been discussion enough and to spare with regard to force and energy. Physicists know quite well what they mean by these words when they are used in a purely interpretative sense. There are I know not how many distinguishable types of attraction and repulsion, stress and strain, of which a force-measure can (or as yet cannot) be given—for example, that which may be inferred when, in the solid, molecules seem to be locked together at definite points of attachment, as Sir William Bragg suggests. But there is, under current scientific policy, *one comprehensive rubric* applicable to the most diverse forms of so-called energy-transformation in all and sundry modes of physical

action. It introduces the concept of "energy of position."

I take it that few will deny that, in the ascending series (*a*) atom, (*b*) molecule, (*c*) crystal, there are modes of action in the molecule that do not obtain in the atom, and modes of action in the crystal unit that do not obtain in the molecule. When the constituent items of stuff are "arranged in a particular way," or go together in a new form of substantial unity, new modes of action are in evidence. The root-question for us, in relation to emergent evolution, is this: When we pass from those integral entities which we call (*a*) atoms, (*b*) molecules, and (*c*) crystals or colloids, to the more complex entities which we call (*d*) organisms, are yet newer modes of action in evidence? We believe that distinctively new modes of action *are* in evidence and need to be distinctively characterised as betokening the level of life. We believe that they are expressions of an emergent step upwards in the evolutionary advance of one natural order of events.

But there is a further root question. When we pass from (*a*), (*b*), and (*c*) in the inorganic world to (*d*) the living organism, do the new modes of action therein afford evidence of a new kind of force (vitalistic), or a new form of energy (so-called "mind-energy"), that belongs to a wholly different, or disparate—let us say *hormic*—order of being?

§ 15. *The Concept of Hormism*

In accordance with the dualistic hypothesis of animism there are two orders of being, that of

mechanism and that which may be called *hormism*. Physical science is concerned with mechanism; animistic psychology is based on a hormic theory (*cf.* M'Dougall, *Outline*, p. 71). We must, it is said, interpret life and mind *either* in terms of mechanism only *or* accept hormic guidance also. It is clearly a case of one or other; and the alternatives are (save for thorough-going monadism), not presence or absence of mechanism, but presence or absence of hormic guidance.

Thus Professor Nunn, in his *Data and First Principles of Education*, asks: "Are we, since our bodies are matter, to seek in physical laws an explanation of the whole of life; or are we, since our bodies are alive, to interpret their activities by what we know of life where its character appears in its highest and clearest form—namely, in the conscious life of the mind?" And his reply is: "Of the alternative ways of interpreting life, the second is emphatically the one to be followed" (pp. 12, 18).

Similarly Mr E. S. Russell asks how we act in everyday life in dealing with our fellow-men. "We regard them," he says, "not as elaborately constructed mechanisms, but as living beings like ourselves, with like passions, desires, thoughts, perceptions. We treat them as individuals, ascribe to them the same sort of faculties as we ourselves possess. We interpret their behaviour in terms of our own experience and our own actions. This attitude of mind is absolutely and entirely different from the attitude which physical science would have us adopt. It is essentially the attitude of psychology. My thesis is that we can escape from the

mechanistic view of life only by adopting in principle this psychological point of view and extending it with suitable modifications to living things in general " (*Proc. Arist. Soc.*, 1922, 3, p. 145).

This thesis I have considered elsewhere (cf. *Evolution in the Light of Modern Knowledge*, pp. 120–22). Let us here turn to Professor J. Arthur Thomson's Gifford Lectures (1915–16) on *The System of Animate Nature*. The heart of the matter, he says, is " that living creatures with a will to live, with an insurgent self-assertiveness, with a spirit of adventure, with an endeavour after well-being—it is impossible to exaggerate the personal aspect of the facts, even if the words which we use in our ignorance may be too metaphorical—do trade with time and have commerce with circumstance, as genuine agents, sharing in their own evolution " (p. 456).

If we try to get further insight into this doctrine we find stress on the presence in the living and the absence in the not-living, (1) of individuality, endeavour, and freedom ; (2) of metabolism, growth, cell-division, and development ; and (3) of enregistering the past, purposiveness, and the variability which gives origin to the new.

Under (1) much turns on the exact meaning of the three words. There is a wide and comprehensive sense in which they apply to every integral entity. In this sense *individuality* is that which distinguishes entities otherwise closely alike. It may characterise each atom and molecule though the individualising feature may be practically negligible. Of the atom no less than the organism it may be said that " changes therein are so regulated and

balanced as to maintain its integrity" (81); that, as Spinoza taught, it *endeavours* to persist in its own being; and that, in such persistence, it is typically *free*. Any integral system, Spinoza said in effect, is free in so far as the manner of its go is intrinsically determinate and not extrinsically determined from without (*per aliud*).

It may of course be said that this is not the sense in which one or other of these words should be used; and that in their "true and proper" sense they apply only to an anima. Here individuality becomes what we commonly speak of as personality with uniqueness nowise negligible; freedom implies choice of alternatives; endeavour is directed towards the alternative which is chosen as end. These are the factors which go to the making of "a genuine agent." It is in this sense that Mr Thomson uses these three words. When he speaks of an indomitable will to live (p. 53); when he emphasises endeavour towards self-realisation (63); when he says of an animalcule that "it is an agent, it has alternatives, it shews experimental indeterminism, it commands its course" (p. 136)—he leaves no room to doubt that he attributes to each several anima prevision of an end to be attained through endeavour.

Under (2) there is little room for disagreement. A multitude of details are here subsumed. But is there more than a compendious indication of that which has to be interpreted on his hypothesis or another?

We pass, then, to the three items I have placed under (3)—enregistering the past, purposiveness, and variability giving origin to the new.

Again and again we are told that " the past lives on in the present " (p. 484 ff.), and does so " with compelling force " (p. 495). In some general sense we shall all agree; otherwise no entity could persist. But when we enquire more closely into the statement we find that it may mean (*a*) that, in the germ for example, *effects* which were registered in the past are retained; or (*b*) that the past *still existing* as " pure memory," is operative in hormic guidance. The animist accepts the latter meaning as that which alone is consonant with his interpretation of life. " If the metaphor be permissible," we are told, " and we cannot get beyond metaphors yet, the germ-cell is the blind artist whose many inventions are expressed, embodied, and exercised in the developed organism, the seeing artist, who beholding the work of the germ-cell either pronounces it, in the light of the success which it brings, to be good, or else, when it spells ruin, curses it effectively by sinking with it into oblivion " (p. 493). How can the germinal artist—albeit blind under metaphor—fulfil its mission if it carry not in the living present the burden of its illimitable past ?

But is it blind ? Can we, on this hypothesis, square blindness and purpose ? One of the criteria of any living entity is purposiveness. In what exact sense, then, is the word " purposive " used ? " It will be understood," says Mr Thomson, " that by purpose in this discussion we mean intention, conative endeavour, anticipation of end " (p. 330). As he often says, " the organism has ever its conative bow bent towards the future " (p. 160, *cf.* 197, 341). That fortunately leaves no room for mistake. It

is intentional purpose within the "resident" and "operative" anima, with "anticipation of end," and "conative endeavour" towards its attainment; and yet somehow consonant with "metaphorical" blindness.

It is here that arises "the problem before which we are baffled," namely, that of "the origin of the distinctively new, where the novelty is qualitative and not quantitative" (p. 417). Now the genuinely new as unforeseen cannot be an end towards which the conative bow is bent. Hence it is "the kind of variation before which we are dumb—the brusque origin of something distinctively novel, a new pattern, an originality" (p. 100).

Such, in some detail, is the animistic hypothesis of hormic guidance. What are its salient features? (1) That human procedure with cognitive and reflective reference to that which is expected or anticipated is explicable only on the hormic theory of the anima. (2) That embryonic development in the individual, and evolutionary advance along lines of descent are explicable only on this basal principle. (3) That pure memory is inexplicable if the living past be not operative in the current present.

Our contention is (1) that human procedure at the reflective level can be otherwise interpreted, (3) that for pure memory no conclusive evidence has been adduced; and that if (1) and (3) be rejected in the light of searching criticism, (2) has no *locus standi*.

This must be regarded as a naturalistic hypothesis alternative to that of animism. So far as I can judge, all the observed phenomena as given in plain

tale *can* be interpreted on either hypothesis. I doubt whether either can be disproved. The crucial question for science is: For which of the two hypotheses is there preponderant weight of inferential support? That for philosophy is: Which accords best with a comprehensive schema of nature as a whole? There is also the question for religion: Which leads up to the wider and richer concept of God?

Must we not admit that on all three counts opinions are divided? Should we not respect, if we cannot share, the opinions of others as honest expressions of single-hearted search for what is deemed truth? May not each of us say—is he not bound to say—what he can in support of that hypothesis which he has been led to accept? My hypothesis is quite different from, and far less picturesque than, that of Professor Thomson. It is founded on the concept of concomitance, not on that of animistic possession. Hormic endeavour does not come into the picture. Hence in the next lecture I shall consider sundry modes of behaviour in biological and physiological regard.

LECTURE IV

A Turning-point in Evolutionary Advance

§ 16. *Patterns and the Engram*

In order to understand what I regard as perhaps the most important turning-point in evolutionary advance, we must consider in some detail the biological provision for pretty definite forms of behaviour in organisms with a well-developed nervous system. And since the salient features of such a system are better known in vertebrates than, say, in insects, we will deal with them.

Let us start with the animal as " a going concern." It is, at any given time in some situation—that is, in relation to surrounding events. We may speak of such events as affording a " pattern " of physical influence. It may be very complex or relatively simple. But it is always some *pattern* that evokes responsive behaviour as contrasted with reflex action. Under this or that pattern of physical influence the organism behaves. What provision is there for this?

Certain areas of the surface, or specialised areas of organs derived therefrom, are attuned to receive different kinds of influence—electro-magnetic pulses, air-vibrations, and so forth. Thus the retina has been evolved to receive a pattern of light-influence focussed as an " image " (in the optical sense) by

the lens of the eye. Areas of the mouth have been evolved to receive a pattern of chemical stimulation from certain soluble things in contact with it. The technical term " receptors " is used for the specially developed structures at the ends of " afferent " nerves. So far, then, a pattern of physical influence gives a receptor pattern of those nerve-ends *which are thus stimulated.* What follows? From the receptor pattern there passes inwards to the central nervous system along the afferent nerves an orderly set of " nerve-waves " ; and when these reach the central nervous system, the spinal cord, or the brain, there is formed therein a central pattern of specific events. From this central pattern of events there flow out " efferent " nerve-waves. At the outer ends of the efferent nerves there are what are technically called " effectors " which call into play the muscles concerned in behaviour.

Thus we have (1) a pattern of physical influence, (2) a receptor pattern, (3) a pattern of ingoing nerve-waves, (4) a central pattern of physiological events, (5) a pattern of outgoing nerve-waves, (6) an effector pattern, (7) a pattern of muscular changes, giving rise to (8) this or that form of behaviour. For all this there is physiological provision.

We have next to realise that the organs concerned in behaviour—not only the muscles, but the adjoining parts implicated in action—are themselves rich in receptors—nerve-ends which are excited by the current motor response. Hence the pattern of response gives a new and different kind of receptor pattern within the organism. Let us here name it the motor receptor pattern. This gives *its* central

pattern and consequent effector pattern, and serves in some measure to modify the response in progress and, therefore, the form of behaviour.

Nor is this all. There proceed from the original central pattern, mainly through the "autonomic system," nerve-waves which influence the action of the heart, the calibre of the blood-vessels, the process of respiration, the functional action of the alimentary canal, the activity of many glands, and so on. Let us call this widespread effect on what goes on throughout the body, apart from the motor action that subserves overt behaviour, a pattern of internal change. Here, too, there is a rich supply of receptors. Thus, in addition to (1) the receptor pattern due to external physical influence, and apart from (2) the receptor pattern due to motor action in progress, there is (3) a receptor pattern due to many internal changes, glandular and other. This internal pattern, through afferent nerve-waves, gives rise to *its* central pattern with consequent efferent influence on the response which takes form in behaviour.

It is all very complex. But one must accept and try to analyse such complexity as we actually find. Furthermore, when one observes that through behaviour the organism is brought into a new situation, or a new phase of the existing situation, and infers that this may and generally does entail a new receptor pattern under the changed external influence, one realises how the complexity may so increase as to baffle analysis, even in comparatively primitive instances of behaviour.

Take, then, such a relatively simple course of

events as occurs when a chick a few hours old pecks for the first time at a ladybird. Analytically treated we have an initial receptor pattern (*a*) in the retina with consequent response; a receptor pattern (*b*) due to this response in the act of pecking; a new receptor pattern (*c*) from stimulation in the mouth; another receptor pattern (*d*) due to the act of throwing aside the insect; and the internal receptor pattern (*e*) due to many widely-spread disturbances in the whole bodily system. And since (*a*), (*b*), (*c*), (*d*) are swiftly sequent with a background of (*e*), there are as many central patterns with, as a net result, such sequence of behaviour as we observe.

Receptor patterns and effector patterns are distributed throughout the parts of the organism that lie outside the central nervous system, but the central pattern is one of events that occur in the central nervous system only. Broadly speaking, the essential feature of the structure of the nervous system is that it is composed of a vast number of "neurones" which are in close relation where their branching fibrils interlace. Centrally, where these fibrils are in this "synaptic" or interlacing relation there is *provision for* the passage of events between them along some route—one may perhaps say from any afferent entrance to any efferent exit.

But this *provision for* the passage of events is not what I have called a pattern. For I have used this word for a pattern *of events*. There is a pattern of events in the optical image for which there is provision in the retina; but apart from stimula-

tion there is no such pattern. There is a pattern of motor response in the organs concerned in behaviour; but apart from effector-excitation there is no such pattern. So, too, there is a pattern of events *actually in progress* in the central nervous system, and this must be distinguished from such provision for their occurrence as is given in the build of that system.

There is thus provision for the passage of nerve-waves along many and various routes. And yet, as a matter of very probable inference from the observed facts, the neurone routes which are actually followed are remarkably definite. How else could *this* receptor pattern give rise to *that* effector pattern? How else could there be a pretty definite form of behaviour in response to adequate stimulation? It seems, then, that the route which is actually followed is one that is relatively more *permeable* than other routes. And if this be so we must introduce the concept of "permeability." It will be convenient to give a distinctive name to that which provides for differential permeability. Let us adapt to our purpose Professor Semon's word "engram." There are, we shall say, "engrams of permeability" in the central nervous system, which provide for the passage of specific physiological events by "these" routes rather than "those." When these events actually pass there is a central pattern of such events for which the engram of permeability affords physiological provision.

There are then, we may infer, certain well-defined routes whose permeability may be regarded as a racial heritage. It seems that, in the course of

organic evolution, those animals have survived in "the struggle for existence" within whose central nervous system there are initially permeable routes serviceable to that end. This appears to be a legitimate inference from the observed facts, however we interpret the biological genesis of inherited permeability along these routes.

We have distinguished receptor patterns, effector patterns, and central patterns. Consider the receptor patterns. They are of two kinds: (1) those due to physical influence stimulating the organism from without, or beyond, its bounding surface; and (2) those due to excitation within the living organism, and afforded (*a*) by motor responses in the progress of behaviour, or (*b*) by other organic changes—visceral or glandular—likewise in progress. Instances of the first kind, therefore, are of extrinsic origin and in relation to the external world outside the organism. Instances of the second kind are of intrinsic origin and in relation to the passage of other events within the organism.

There is a valid sense in which it may be said that instances of both kinds—external and internal—date back to quite early embryonic life. But the internal patterns then in process of progressive differentiation are, presumably, even then so integrated as to preserve the substantial unity of embryonic life in the womb or within the egg-shell. In the matter of external receptors, however, the environment presented in the embryonic development of birds and mammals differs widely from that which is presented in the course of post-embryonic development. For example, the retinal

distance receptors, which play a leading rôle from hatching or birth onwards, have then no adequate stimulation, and, save under contact, there is as yet but little behaviour in relation to an external world with subtly varying modes of physical influence.

If, then, we regard behaviour as in the main post-embryonic business, subsequent to hatching or birth, we are tempted to interpret it in terms of response to external stimulation, and to make that our starting-point. This has been our method of procedure. None the less it is quite essential to take into full consideration an already existing internal pattern. The response elicited by any external pattern is, even on some first occasion, not due to that pattern only. It is due also, and in very large measure, to the complex internal pattern of the whole organic poise of the bioses at the time being. External stimulation breaks in on an orderly set of life-processes already current.

§ 17. *Some Observation and an Interpretation*

As we proceeded on our course so far, we reached the concept of an inherited engram of permeability with routes already established. But if this persisted unchanged throughout life, response to stimulation would, from first to last, preserve a stereotyped form. Is this what observation discloses? One must deal with such a question in detail, selecting some example which may be regarded as typical.

Revert then to the chick and the ladybird. Consider the outcome of the initial stimulation of the retinal receptor pattern which we infer in the

particular episode under review. What more may we infer? That nerve-waves from this pattern course through the chick in such wise as to evoke the pecking response. There is, we infer, a central pattern which we may label A. But this implies a pre-existing engram of permeability. Otherwise why should this route be taken by the nerve-waves and not some other? So, too, as the situation develops, with the other central patterns we distinguished. Each presupposes an engram of permeability. Select for attention some one of the others, say C, when the ladybird is seized. Here the receptor pattern (*c*) is a pattern of events in the specialised receptors in the mouth; the outcome in behaviour is the rejection of the ladybird in quite characteristic fashion. Hence the outcome of A (pecking and seizing) and the outcome of C (rejection) are quite different. If, then, A and C be central patterns, initially independent, for each of which an inherited engram affords provision; if this initial independence remain throughout the life of the chick; if in normal sequence *c* follow *a* on the first occasion; then, on stereotyped interpretation, what we should observe on *any* occasion—first, second, third, or last—should be (translated into mental terms) seeing, pecking, seizing, tasting, rejecting, and so on *da capo* whenever a ladybird is seen. But as a matter of fact we observe nothing of the sort. What we observe on subsequent occasions is not susceptible of such stereotyped interpretation. The ladybird is rejected *at sight*, or perhaps ignored. We must ask, therefore: What is the physiological provision for the form of behaviour that we do observe, namely

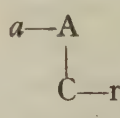
that, on a subsequent occasion, under external circumstances similar to those of the first occasion, the chick's procedure is quite different from that which was then observed. There is often an incipient act of seizing ; but the insect is not seized. There may be a pantomime act of rejection ; but, since the ladybird has not been taken into the mouth, there is nothing to reject.

Such, in brief, are the observable facts in plain tale. Their interpretation in terms of engrams rests on the hypothesis that when two central patterns, say A and C, co-exist they no longer remain independent ; that there is opened up—not made but opened up—a new neurone route, or routes, connecting them. This means that the *primary* neurone route from the retinal receptor pattern *a*, through A, to the effector pattern for seizing the ladybird is no longer the only route ; for a *secondary* route has been opened up, from A to C, within the central nervous system.

In diagrammatic (but nowise pictorial) form we have *on the first occasion*

a—A—seizing (which entails *c*)
c—C—rejection.

But *on a subsequent occasion* we have



Here instead of seizing the ladybird the chick performs a sort of pantomime act of rejection—often wiping its bill on the ground, which was origin-

ally the next link in the chain of behaviour. The primary behaviour, sequent on *a*, is unexpressed; only the behaviour originally sequent on *c* is expressed. But the alternative route seemingly need not be taken. What we observe on later occasions is neither seizing nor rejection. The specific receptor pattern *a* has seemingly no outcome in behaviour. Both kinds of response are so far unexpressed that it looks as if nothing happens.

We may now extend our observations a little. Let the initial retinal stimulation be different—that which we speak of as due to a maggot in the field of view. The initial pecking response is much the same. Nay more; *anything* that, as *we* judge, is of about the right size and at about the right distance —that is, small and within pecking reach—is seized. On the first occasion I can detect no difference in response in accordance with the nature, nice or nasty as we say, of the object. Thereafter, on subsequent occasions, the behaviour is observably different. Initially, whether the thing be ladybird or maggot, it is seized; but, in further behaviour the maggot is swallowed and the ladybird is thrown on one side. And if both maggots and ladybirds, say half a dozen of each, are present, there is at first, so far as I can detect, no preferential pecking at one rather than the other. This or that ladybird is seized and rejected; this or that maggot is seized and swallowed. But even in the course of a few minutes' observation a further difference is seen. All the maggots are seized and swallowed; some of the ladybirds—perhaps only two or three—are seized and rejected; very soon these and others are seemingly ignored.

On the basis of observation, then, one seems justified in distinguishing the first occasion of seizing this or that, and the subsequent occasions. For it is on these subsequent occasions that the behaviour to ladybirds and maggots is quite different.

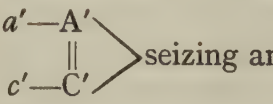
How shall we put this diagrammatically ? On the first occasion we have, much as before, *mutatis mutandis*,

a'—A′—seizing (which entails c')
c'—C′—swallowing.

Wherein then lies the difference ? In the maggot-situation what is sequent on c' (taste-stimulation) is swallowing ; and this swallowing may be regarded as the consummation of the seizing entailed by a' (sight-stimulation). But in the ladybird situation what is sequent on c is rejection. Here, therefore, swallowing, as the consummation of seizing, does not follow. What follows is rejection ; and rejection and swallowing are incompatible. It is a case of one or the other.

What seems to happen in the maggot-situation is that, on subsequent occasions, the sight which led to the primary response of seizing, and the taste which led to the primary response of swallowing, conspire in secondary connection in such wise that each endorses the other.

If this be so, put in diagram form, there would be something like this :



What this purports to show is that the reciprocal connection of the central patterns A′ and C′ is such

as to reinforce on the subsequent occasion the seizing response which originally followed *a'*.

It may be asked, however, What evidence can be adduced on the basis of observation in support of this ? Here we are prone to reply in terms of mental import. What any careful observer will, I think, say is that on subsequent occasions maggots and other nice things are seized " with added zest " or " with increased avidity," or something of that sort. In any case, according to the specific character of *c* and of *c'* respectively, the course of behaviour is different, though *a* and *a'* may be indistinguishable.

No doubt, under natural conditions *a'*, the maggot pattern is readily distinguishable from *a*, the lady-bird pattern. But experiment shows that this need not be so. Boiled rice-grains were soaked in quinine so as to render them appreciably bitter to my taste. Some young birds under observation were allowed to have no experience of rice-grains other than those thus medicated. These were soon rejected, and thereafter ignored. If at this stage not-medicated rice-grains were given with other food-stuff, not one of them was pecked at or seized. Here *a* and *a'* are at sight indistinguishable. The difference of behaviour on subsequent occasions seems to justify us in inferring a difference between *c* and *c'* according to whether the rice given on early occasions was medicated or not.

We have seen that when a chick has " learnt its ladybird lesson," thereafter, on later occasions, these insects are seemingly ignored. It looks as if nothing happens. But it may be that something has happened and has left effects which may afford a clue to further interpretation.

The behaviour is enchained. The pecking response, as a link in the chain, is elicited by retinal stimulation, when the rice-grain or other small thing is at the right distance. On receipt of this, stooping and pecking follow. But if the eye-stimulation be different, when the grain is further off, the chick goes towards it. Thus we have a chain of observable responses, namely, step or two forwards, stooping, pecking, and all that follows. But during the stepping forwards the visual pattern and the posture progressively change. To bring the thing off there must be—I believe there observably is—a postural attitude of head and neck, and a *clinging of gaze*, that are maintained. If this be so, the *first* observable link in the chain of responses is this postural clinging of gaze. *This is probably the initial and primary response in all effective vision.* It is readily observable in the human infant (*cf.* Miss Millicent Shinn, *Biography of a Baby*, p. 58).

Now when a chick has pecked once or twice at medicated rice-grains, the initial response on subsequent occasions is, I believe, *aversion of gaze* with change of postural attitude. Such at any rate is my impression.

Fully admitting that my strong impression may be erroneous, I feel justified in proceeding on the hypothesis that such aversion of gaze is part of the evidence. But it seems to be secondary. The *primary* response to any adequate visual stimulation appears to be clinging of gaze. It seems, then, that *only on subsequent occasions* is aversion in evidence. And it may well be connected with the gustatory stimulation giving rise to shaking of the head which

entails change of postural attitude. One must remember that the normal procedure on these later occasions is a restless peering this way and that—"in search of food," as we say. In this process there seem to be (1) clinging of gaze to maggots and things good to eat; (2) not-clinging to things indifferent; (3) aversion of gaze from things nauseous. And when later on nauseous things are ignored, it is hard to be sure whether there is "not-clinging" only or still some aversion of gaze also.

In any case the factor of postural attitude of gaze must receive due recognition if our aim be hereafter to trace the manner in which conscious guidance of behaviour has its evolutionary genesis.

§ 18. *Conditioned Behaviour*

I have tried to tell a physiological story of certain episodes in the early life of birds. There is, so to speak, a plain tale of behaviour actually observed. Such a tale is frankly descriptive of what happens under circumstances duly noted. But in further *story* we seek to *interpret* what happens. And we may do so in the light of the physiological concepts which are the outcome of prolonged inquiry into the structure and functions of the central nervous system. That I have attempted to do in a manner and under phraseology which is no doubt open to criticism by experts.

There is, however, another and quite different story—that in which we seek to interpret what happens in the light of mental concepts—in terms of accompanying enjoyment and cognitive or non-

cognitive reference. On our hypothesis we ought to keep the life-story and the mind-story distinct, though they are *au fond* inseparable since each is concomitant with the other under duality of nature. As things are, however, this is well-nigh impossible. One cannot get along without some explicit reference of the reflective kind to " taste," and " sight," and to such objective constructs as " ladybirds," " maggots," and " rice-grains," which we speak of as " at such and such a distance." There are, I suppose, almost inevitably implicit, at the back of one's reflective mind, concepts of memory, of expectation, of end in view (in some sense) and endeavour to reach it. All these are distinctively mental concepts. I shall deal with them in the next section. Here I pursue a little further the life-story, though I shall still introduce some of the concepts proper to the mind-story. It is difficult to put matters intelligibly without doing so.

We need some group-name for the new form of behaviour which is observable on subsequent occasions if it be interpreted in the way I have sketched. The word " conditioned " has come into vogue. Under suitable definition " conditioned behaviour " seems best to meet our need. When an organism responds in one way to one kind of stimulation and in a different way to another kind of stimulation, each response may be spoken of as primary. Let these two responses be elicited simultaneously, or in close succession, on several occasions. Then if sooner or later the one response is elicited by the *other* kind of stimulation, there is a conditioned response, and there is presumptive evidence of the

opening up of an inter-connecting route within the central nervous system, and of a secondary engram of permeability. On these terms, then, a conditioned response implies the establishment of individually gotten permeability of neurone routes. Note that conditioned behaviour always presupposes primary responses as the basis on which it is founded. The conditioned is on a higher evolutionary plane than the primary. The entrance of conditioning on the scene has been one of the most important turning-points in life-progress.

The classical example of a conditioned effect on the plane of reflex-action in functional events was demonstrated by Professor Pavlov's work in connection with salivation. When a dog is fed, gustatory stimulation in the mouth induces a flow of saliva. That is part of the primary response. There is also motor response in mastication and so forth, but we here concentrate attention on the response of the salivary glands. There are, however, many other primary responses in the dog; for example, pricking of the ears when there is auditory stimulation. And initially there seems to be no functional connection between any two of such primary responses. But let the dog receive auditory stimulation from some definite sound concurrently with gustatory stimulation from food in the mouth on a certain number of occasions. Then what happens is that the sound by itself induces a flow of saliva (which can be measured by inserting a cannula into the salivary duct) *without any gustatory stimulation.* A secondary connection seems to be established in the course of the experiments; and this affords a

route of relatively greater permeability, or, in technical terms, of lessened "synaptic resistance." And since salivation is hardly at all (if at all) under conscious control; since, too, the nature of the investigation (into which I cannot here enter) seems to preclude cognitive reference; we appear to dig down to a purely physiological interpretation of this conditioned response.

In diagrammatic representation let *g* be the gustatory pattern and *au* the auditory pattern. And let G be the initially permeable route from *g* in the central nervous system; Au the initially permeable route from *au*. Then we have on the earlier occasions, as synchronous—

g—G—salivation.
au—Au—pricking of ears.

But on the subsequent or later occasions we have—

G—salivation.
|
au—Au

There is no gustatory stimulation, and the pricking of the ears is (as I understand) unexpressed. Nerve-events run their course from *au*, through Au to G, and thus to the salivary glands.

It may be asked why the route between Au and G is rendered more permeable when these brain-centres are in synchronous activity. Perhaps we do not as yet fully know. But that it does become more permeable seems to be a legitimate inference from a large body of physiological facts.

In further illustration I am allowed, through the courtesy of Dr E. J. Allen, to give a condensed summary of the results of experiments carried out by him at the Plymouth Marine Laboratory.

Electric bells or "buzzers," sealed up in tins, were suspended in the tanks in which such fishes as Pollack and Rudd are kept. At first there was no evidence that the fishes were affected by the vibrations transmitted through the water. Food was then placed day after day in the neighbourhood of the ringing bell. After a time—a month or so—when the bell was set in vibration, with no food near, the fishes assembled round it apparently in search of the customary food. Two bells, some twelve feet apart, were fitted in the tank. By ringing them alternately the fishes could be drawn to and fro in the tank towards that bell which was in vibration.

It seems, then, that the fishes were stimulated by the vibrations in the water in some such way as we should speak of as hearing the bell. It seems that what we speak of as an "association" was established between the sound of the bell and the sight and taste of food. It seems that there was expectation of food when the bell was rung, and that the behaviour of the fishes was guided by such expectation.

This is a typical conditioned response—learnt in the course of individual life. The fishes, as we say, profited by "the lessons of experience." We naturally interpret this in mental terms—hearing the sound of the bell, sight and taste of food, "association of ideas," expectation, and so on. But we know very little about the mind of a fish. And in any case, such mental processes as may be present can only be surmised from that which is observed. What was observed in Dr Allen's fish is a new manner of response in behaviour under certain

conditions of external stimulation ; and what may be inferred is some physiological provision for the establishment of a conditioned response, one acquired in the course of individual life.

We have seen that internal receptor patterns, no less than those of extrinsic origin, have to be taken into consideration. The former are the physiological concomitants of certain forms of enjoyment and contribute to the emotional poise at the time-being. The latter are recipients of influence with correlative mental reference to the external world.

Let us assume that such an emotion as we call " fear " has its bodily concomitants in some kind of commotion in the arcana of the organism. Now one very common form of stimulation to such responsive behaviour as is apparently accompanied by fear is a sudden sensory shock. It is easy so to arrange matters that, when an animal or child sees some object, a sound-shock, or an electric shock, is given which elicits the fear-response. After a few experiments the shock is no longer required. The animal or child exhibits a conditioned fear-response at sight of a like object.

We thus link up within a physiological schema internal events, accompanied by specific forms of enjoyment, with behaviour carried out with non-cognitive or cognitive reference to external events.

§ 19. *Bearing on the Story of Mind*

I have drawn a distinction between the first occasion and subsequent occasions. On the first occasion the observed behaviour leads us to infer an

inherited engram of permeability. On subsequent occasions the behaviour may be observably different. My use of the expression "subsequent occasions" implies that there is such a difference. On this understanding we have been led to infer that the response is conditioned through the opening up of an inter-connecting route in the central nervous system—or, if it be preferred, through the breaking-down of synaptic resistance. When this route is well-established by repetition on several occasions, the conditioned behaviour becomes habitual. The number of such occasions requisite to establish an habitual response must be ascertained by observation.

Now it is alluringly easy to explain all that a chick or a child does in the early hours or days of his free life, if we may credit him with cognitive (and perhaps also reflective) reference writ small. On this hypothesis he has at call a store of memories of what his ancestors have done in the past. On the first occasion, no less than on subsequent occasions, there is an end to be attained, endeavour to attain it, and remembrance of how it was attained in the course of ancestral experience. However small these may be writ, there they are. Take the step or two forwards "in order to" bring the object to be pecked at within striking range. How can this be explained unless we attribute to the chick some recognition that this is the means by which the end in view will be attained by him as it has been attained in the experience of the race which is his through storage of ancestral memories? Why should he peck at anything if he does not recognise, however dimly, that this is a means to the end of swallowing, as that

is a means to the end of nutrition? Why should a little coot dive when it is startled if he does not in some fashion realise that thus will he escape some danger of which a sensory shock is the warning note? What leads an older bird to mate and couple if there be no inkling of that which accrues? One must not, of course, assume prevision in a clearly-defined form. But, in general terms, if this or that pattern of stimulation carry no meaning with cognitive reference to that which will follow in due course, how can we explain behaviour on the so-called first occasion?

In all this, which belongs to a different hypothesis from that which I seek to develop, the stress is on cognitive reference on the first occasion. The distinctive feature of cognitive reference, as I define it, is *revival* in the form of some factor which thereby gives meaning heretofore absent. Such revival—for example taste-revival—seems, on the evidence to be present when, on subsequent occasions, the chick seizes maggots with added zest, but does not seize ladybirds. *It does not seem to be present on first occasions.* In the hundreds of young birds that I have carefully watched from hatching onwards, *not one* has avoided ladybirds or other nauseous or harmful things at first sight. In this matter, which is typical of all "first occasion behaviour," I find nothing on which the hypothesis of storage of ancestral memories can be based. And I must speak as I find.

Let it, then, clearly be understood that by a first occasion I mean that which has no like predecessor in the individual life. It needs close and detailed

observation to distinguish, save in specially selected cases, their firstness, for they appear in the midst of much that is of the subsequent kind—much that is conditioned. But it seems to me undeniable that, under careful observation, there are first occasions on which a chick pecks, swallows, rejects; when an older bird pairs, builds a nest, lays an egg; when this or that animal responds for the first time in this or that way with a recognisable form of behaviour new in its life-history.

Let the first occasion be that on which a duckling, taken from the snugness of the incubator drawer, is gently placed in a tank of water. It straightway swims. This is a new form of behaviour. The little bird has, no doubt, waddled about in the drawer; but though many of the muscles concerned in walking and swimming are the same, the substantial unity of their usage in swimming is quite different from that in walking.

Before such committal to water the duckling is a living bird. Concomitant through and through with its life is enjoyment in living. On to this life breaks in the stimulation of water on the breast and a consequent chain of primary responses. There is probably also visceral response; the little bird commonly defecates; heart-beat, respiration, and much else, are modified. In the story of mind, there are accompanying modifications of concomitant enjoyment (*a*) under stimulation, (*b*) in the course of behaviour, and (*c*) under internal excitation.

But in even so primitive a mind there is not only enjoyment; there is also reference, say to that which cools the breast, and to a pattern of events

that affords retinal stimulation. I interpret such reference on the first occasion as non-cognitive. Why non-cognitive? Because I see no evidence of *factors of revival germane to the situation.* If there be no ancestral memories, what is there to afford *ad rem* revival?

On subsequent occasions, however, they seem to be present. "First sight" of water does not lead a duckling, isolated from the parent bird, to enter it; but on subsequent occasions it does so at sight. Three "first occasion" ducklings, and three "fourth occasion" birds were placed near the margin of a little pool. The latter ran to the water at once and swam; the former did nothing of the sort. Does not this justify the inference that, in the latter, the response was conditioned? Sight of water which at first has no connection with swimming, and the outcome of stimulation afforded by contact with water, seem now to be so connected that the former gives rise to the "step or two forwards" towards swimming. Under conditioning the behaviour precursive to consummation comes into the more complex life-story.

In terms of the story of mind may one not infer that there is expectant revival of pleasant experience to follow, and that this revival renders the reference in mind not only non-cognitive, but in a measure cognitive and fraught with some meaning?

If it be said that these trifling observations on young birds have no wide bearing on the inquiry in hand, I must enter a demurrer. What we seek to wrest from such observations is an answer to these two allied questions. (1) What is the nature of the evolutionary passage from the lower non-cognitive

reference to the higher cognitive reference? (2) Does the advent of conditioning in the life-story throw light on the advent of cognitive reference in the mind-story? As we are digging down to foundations, the nearer we can get to basal facts in direct observation, however trivial, the better.

I submit that the salient feature in the passage from non-cognitive to cognitive reference is that the revival which gives to the latter its guiding value is prospective. Co-present in time, it forestalls the coming event. Let me speak of this as cognitive *prevision*—used in such a sense as to cover any form of anticipatory perception. But since we have to reckon not only with mental reference, but with enjoyment that accompanies internal processes in the arcana of the body, we need some word for anticipatory enjoyment—that which is now present in revival, but antedates the fuller enjoyment that will come in due course. Let us speak of this as *foretaste* in enjoyment—used in such a sense as to cover any form of expectant revival as affective. The " fourth occasion " duckling running to the pool had, as I surmise, foretaste of the enjoyment to be tasted in swimming. I have just now foretaste of what I may taste this afternoon on the golf course. But in my case it carries reflective reference to a dated future.

I further submit that the conditioned response, which includes internal conditioning of visceral processes, throws a strong beam of light on the passage from non-cognitive to cognitive reference. I submit that the psychological turning-point is concomitant with the physiological turning-point.

I must revert once more—with due apology—to the pecking chick, combining in a measure the life-story and the mind-story, with emphasis on foretaste, but without prejudice to prevision also present in the picture.

What we have on first occasions is, in order of sequence: (1) sight; (2) pecking and seizing; (3) tasting; (4) either (*a*) swallowing (maggot), or (*b*) rejecting (ladybird).

Here the fourth stage is either swallowing or rejecting according to the nature of the stimulation in the mouth, or, in mental terms, to the kind of taste, nice or nasty. But on subsequent occasions, when a conditioned response has been established, we have a different *and partly inverted* order, namely: (1) sight; (2) foretaste; (3) either (*a*) pecking, or (*b*) not pecking; (4) (*a*) swallowing, or (*b*) rejecting, or (*c*) ignoring.

The point for emphasis is that here taste-revival *is brought forward from the third to the second place in the sequence.* Whereas actual tasting *follows* pecking and seizing, foretaste *precedes* pecking or not-pecking. It antedates and forestalls the actual event in act. This act may then either be endorsed so as to lead on to swallowing, or it may be inhibited, more or less completely, and replaced for a while by the action of rejection. And which of these two acts follows is determined by the character of the foretaste, pleasurable or the reverse as the case may be.

It is this inversion of order—this antedating—entailed by the conditioned response, that introduces a quite new factor, that which we speak of as

conscious guidance. It should, however, be noted that this does not imply determination of present process by anything in the future ; for the future is not yet in being. It implies determination of further process by present process which is here and now accompanied by foretaste.

§ 20. *Learning and Habit*

In some sense the conditioned response is learnt or acquired in the course of individual life. The question therefore arises : When is it so acquired or learnt ?

One should here, I think, distinguish what I have spoken of as the story of life from the story of mind. The former is told in terms of physiological concepts ; the latter in terms of mental concepts—in terms of enjoyment, and of reference, non-cognitive or cognitive. Since we have the two words " learnt " and " acquired " it may conduce to clearness if we earmark the latter for use in physiological regard and reserve the former for use in mental regard. On this understanding the conditioned response is *acquired* ; cognitive reference with some expectant prevision is *learnt*. Our contention is that what is thus learnt is concomitant with some conditioned response, or set of responses, that is acquired. Does then acquisition or learning belong to the first or to some later occasion or occasions ?

" When," Professor Stout asks in an oft-quoted passage—" when does the animal learn its lesson ? does the actual process of learning take place on the second occasion or on the first ? Plainly," he says,

"it takes place on the first and not on the second. On the second occasion the lesson is utilised; but in order to be utilised it must already have been learned."

There is a valid sense in which all will agree that plainly this is so. When in connection with human affairs we speak of learning a lesson, we attribute to the learner *reflective* reference to some end to be attained by such learning. There is intentional endeavour to reach this goal by such means as lie at the disposal of the person concerned. Thus does a boy learn to ride a bicycle. That is his aim. He has it in mind on the first occasion no less than on subsequent occasions. His very first step in learning is taken in order that he may ride as he sees other boys do.

In reflective learning, then, we start with a mind that has reached the level or stage of mental development at which such a process has become "common form" in human procedure. Has the chick that pecks at some small thing on some first occasion reached the stage at which it can learn in any fashion even distantly resembling this? I think not. Nor on any subsequent occasion does it thus-wise learn. I do not suggest that Mr Stout would affirm that it does. I can only quote what he says (1910). "There is nothing," he says, "to show that learning by experience is ever an unintelligent process involving merely a sequence of blind sensations and feelings without discrimination and identification and without any apprehension of successive and simultaneous parts as related to the whole and to each other within the whole."

Such is Mr Stout's concept of the mind of a chick a few hours after hatching. Mine is different. Let us, however, whittle down this radical difference to its irreducible minimum. Whereas I find no evidence that on the first occasion there is any foretaste or prevision of what is coming, Mr Stout urges that, if this were so, on no subsequent occasion could "mere revival . . . suffice to explain the birth of a new power to transcend the blind and ignorant present so as to anticipate a future event." And there we must leave it, realising that the point at issue is the nature and status of primitive mind.

Revert now to the boy and his bicycle. Let us analytically disentangle one factor in the process of learning. Quite essential is the establishment of an associative connection between the stimulation afforded through the inclination of bodily poise to left or right and the turning of the handle-bar in that direction. This is acquired as a conditioned response ; and in *this* sense is learnt in the course of practice. It is part of the established habit of the cyclist. But until it is thus learnt, is there any prevision of the outcome of such learning ? I think not. Nay more ; even when it is thus learnt as a habit, the boy cannot tell you which way he turns his handle-bar when he begins to fall over to the left. As often as not he will give the wrong answer. The answer requires reflection on what should be done. And he often supposes that to correct the tendency to fall to the left the handle-bar is turned to the right, which is what he does not do when he is cycling.

It seems, then, that under repetition of a con-

ditioned response, a life-habit may be established, and that learning in *this* sense—to be distinguished from reflective learning—is the mental correlate of such acquisition. If we ask when in *this* sense, in the chick a few hours old, "learning" takes place, on the first or on later occasions, we may reply that it begins on the first occasion and is thereafter further developed. On the first occasion an associative channel is opened up; on later occasions associative revival comes into the picture. But on the first occasion there is neither prevision nor foretaste. It is this absence of prospective reference in even the most indefinite form that distinguishes this occasion from others. There is, as I put it, non-cognitive reference; but there is as yet no cognitive reference, since this implies revival.

If Fido comes in from the garden on sound of the luncheon-gong, I should say without hesitation that he has learnt to do so, meaning thereby that his behaviour implies associative revival concomitant with a conditional response. But if, as is probable, his mouth already waters for the tit-bits in store for him, I should have more hesitation in saying that he had learnt to salivate at sound of the gong. None the less in the life-story this conditioning is similar in principle to that; and in the mind-story the current enjoyment in a salivating dog has a distinctive quality as the mental concomitant of this physiological process in being.

Still one does use mental terms more freely where some recognised form of behaviour is under observation. In such terms one naturally tells the story of Professor Pavlov's white mice.

It took some time before the mice habitually responded to the sound of the bell with seeming expectancy of food—or, in physiological regard, for the establishment of the conditioned response. One may, I think, say that all habit at *this* level of mental development is concomitant with the acquired process of conditioning. But to beget a settled habit of this kind, few or many occasions may be requisite. It took some time in the case of the white mice. "Some time" is, however, indefinite. Professor Pavlov now enables us to say: Some 300 lessons were required to establish a habit which for him (not for the mice) was the end in view.

Now comes something new, of great interest and importance. Professor Pavlov dealt with several generations of mice. In those with which he started, some 300 lessons were required. But for the children of these mice 100 lessons sufficed; with their children only 30 lessons were needed; and in their children, of the third filial generation, but 5.

Here we have expert evidence of a response to the bell that is more rapidly learnt in succeeding filial generations. The habit of responding to this call to meals is much more readily established in the great-grandchildren. But it still required five lessons. There is as yet no evidence that, in the physiological story, a secondary route becomes a primary route—that apart from *any* lesson, even *one* lesson, auditory stimulation is *on the first occasion* followed by this response in behaviour. What has been so far observed still implies a conditioned response. In my own observations on young birds, a habit of

avoiding such nauseous insects as soldier-beetles was established on a basis of two or three lessons—sometimes only one. And yet in thousands of experiments I have never observed avoidance at first sight, that is, without any learning. And yet such nauseous insects had probably been tasted by parents and grandparents and more remote ancestors.

This does not detract from the value of Professor Pavlov's results. Nay, rather, it points to the need of further inquiry. And if, so far, some conditioning seems to take place, the question is raised : How comes it that fewer and fewer lessons are required to beget an habitual response ? Perchance we do not know. Then it opens up a new problem in connection with the conditioned response. We have certain facts in the plain tale of direct observation —facts of wide biological bearing. We have yet to learn in detail their physiological story.

LECTURE V

Emergence in Mind

§ 21. *Mind an Attribute of Nature*

In the third lecture we considered life as emergent. The word "life" there denoted a level attained by certain natural entities in the story of the give and take of physical influence.

If we accept the word "mind" as denoting that level of mental development at which distinctively cognitive reference is in evidence, we may speak in like terms of mind as emergent. It is on these terms emergent, not of course, for us, from life in its physiological aspect, but from a mode of mental being which has not yet attained the level of *cognitive* mind. It is in this sense that, even in the synopsis of these lectures, I have used the word "mind." I now think it better (*cf.* § 2) to use the word in its wider sense, much as Spinoza used "thought," to designate an "attribute" of nature. In that sense one does not speak of mind as emergent. Hence we have to consider emergence *in* mind, that is, the application of the concept of emergence to natural events regarded in their mental aspect under duality of nature.

I dealt at some length in the foregoing lecture with instances of behaviour which may have seemed too

trivial to be worthy of a place in a serious consideration of life and mind. Every one knows, it may be said, that chicks and other young birds of like "precocious" kind, peck instinctively at small objects, and do so at sight with surprising accuracy; every one knows that they swallow what is conducive to the nourishment of their little bodies, drop what is of no service to that end, and reject with obvious signs of disgust what is nauseous or harmful; and every one knows that they are by nature endowed with sufficient intelligence to profit by the lessons of experience, and that they very soon learn to eat, when hunger prompts and need arises, such things as are good for them, leaving other things uneaten. All the rest is mere detail.

But is it not clear that even so familiar an instance of animal behaviour opens up the whole difficult problem of life and mind in such a manner as to focus the issue as it is presented in the particular instance under consideration?

What did our discussion lead up to? Remember that our belief is that the totality of physiological events, which go together in substantial unity to constitute the chick's life, have as their concomitant the mind of that chick, no less an expression of substantial unity. In regard, then, to the life-story, one had to consider the salient features of events in the nervous system that link response to stimulation; and, building on the net outcome of neurological inquiry, one had to proceed on such data as are afforded by observation. There seemed to be an observable difference between the behaviour on some first occasion and that on subsequent occasions.

It was suggested that there is provision for first-occasion responses in certain initially permeable neurone routes constituting an "engram" in the central nervous system, and that behaviour on subsequent occasions might be interpreted as due to the opening up of secondary neurone routes. This is frankly hypothetical. No less is it analytical. It would be wearisome again and again to interpolate a reminder, however essential it may be, of the synthetic concept of substantial unity. But my whole treatment is subject to this concept. Always and on every occasion what the chick does, how it behaves, is the visible or hidden outcome of *its life as a whole*. And if, as I suggested in § 19, the life-story may throw light on the mind-story, let it not be forgotten that it is the chick's mind-story *as a whole* within which a mental turning-point in evolutionary advance may, as I think, be distinguished. This turning-point in the mind-story is the dawn of expectancy with prospective reference to coming events.

The upshot, then, so far, is this. The chick behaves at any given time as a whole, whether we interpret its two-fold story, (1) physiologically in terms of life, or (2) in terms of mind, under enjoyment and mental reference. Restricting attention for the present to the life-story, certain behaviour spoken of as "conditioned" may be distinguished and interpreted under a suitable and admittedly tentative hypothesis.

Now behaviour from first to last is the expression of determinate plan, just as the structural development of the organism from first to last is the ex-

pression of determinate plan. But with the advent of " conditioning " there is a new factor in the plan of behaviour. In so far as this factor is part of the plan, one may speak of the behaviour as secondary, reserving the word " primary " for the initial plan in so far as it is not modified by conditioning.

Just here, however, difficulties arise owing to the inter-relation of the primary or original plan of racial origin, and the superimposed plan acquired under conditioning in the course of individual life. One has to realise that the original plan of behaviour, no less than that of structural development, is itself *progressively unfolded* in the course of individual life, and that any given stage of the one is concomitant with a like stage of the other. One has to realise, too, that the superimposed plan is likewise progressively unfolded, and that primary and secondary unfolding conspire at any given stage of life-progress. Disentangling of the factors of this progress must always be a hard task for the cautious interpreter. Broadly speaking, at any stage some hitherto unexpressed feature of the original plan may find expression in individual development. And yet this new form of behaviour, though not itself conditioned, breaks in on the life that is already in large measure richly conditioned. It is not the secondary outcome of conditioning. None the less it finds expression only when conditioned behaviour has attained a high level of complexity.

So long as we keep strictly to the life-story, the distinction between primary and secondary behaviour suffices for purposes of analysis. But this or that new outcrop of primary behaviour, hitherto unex-

pressed, is what the biologist has been wont to call "instinctive." This may, for him, and for the radical behaviourist, imply that an instinctive act is physiological only. For me, it has never carried this implication. Unguarded as some of my attempts at verbal expression may have been, what I have always sought to render clear to myself and to others has been that it is in some sense conscious, but subject to a distinction between "accompanying consciousness" in instinctive behaviour as such and "effective consciousness" as a factor of guidance in the behaviour that used to be called intelligent.

I must try to show what this means. But it is not easy—it is perhaps increasingly difficult—to make sure what anyone means when he talks of "consciousness" or of "the unconscious."

May we, as an avenue of approach, seek to get at what the plain man of affairs means when he says that on such and such an occasion he acted consciously, and that on some other occasion he acted unconsciously? If we ask him, I think he may reply to the following effect. "I mean by acting consciously doing this or that—or perhaps refraining from so doing—with some measure of intention and with some measure of attention to what is done or to its outcome. The emphasis may vary, but one or other, or both of these, characterise action which is performed consciously. If I say that I have offended a man unconsciously, I mean that I had no intention to give offence. When I say that a cyclist guides his machine unconsciously, I mean that he no longer has to pay attention to the business of steering, avoiding stones on the road, and so on.

And if I speak of a girl as ' a conscious puss,' I mean that it seems always to be part of her intention to draw attention to herself. I know that this is what you may call self-conscious conduct. But it seems to be of like nature, in principle, to the other cases."

Let us ask our good friend one or two questions. " You are no doubt aware how some of us wrangle over the exact signification of words. In speaking of intention and attention, what feature in these rather complex processes would you emphasise ? " I think the reply might be, " Remember that I am a plain man of affairs and not a psychologist. What I should emphasise is some looking ahead. When I act consciously it is always in reference to what the business in hand leads to. I believe that this is so even when it is my intention to recollect what I have done or perhaps recall someone's name, and when, to that end, I attend to the matter in the hope of recapturing what I have lost." Another question : " Suppose the man's name strolls into your mind later on in the day when your attention is otherwise engaged ; how would you label this occurrence ? " " Rightly or wrongly I should not speak of this as a conscious act. It is for you to explain it. The point for me is that I did not consciously recall the name. It just came unbidden." One more question : " Do you mean that you are nowise conscious when the man's name comes unbidden ? " " Certainly not. Of course I am conscious in one sense of the word, as I am when I offend a man unconsciously in another sense—as I am when I sneeze, start at a sudden noise, or get a lumbago-stab. And though I think that the context always enables one

to decide without much difficulty in which of these two senses one uses the word, still I suggest that you good folk ought to avoid using one word in two senses. But that is your affair."

§ 22. *Levels of Reference*

There seems to be a real difference between two senses in which one may speak of acting consciously —that in which one acts with reference to some expected outcome of such action, and that in which there is little or no prospective reference. In our current experience these two modes of being conscious can only be distinguished under reflective analysis. But if they can be distinguished, should we apply to *both* the *same* adverb ? It is no doubt open to us to restrict the use of the word " consciously " to acting with prospective intent, which implies conscious guidance towards some foreseen end. The trouble is that this leaves certain peculiarly vivid and insistent modes of experience to be labelled " unconscious " or " subconscious." And since such accompaniments of unintentional action often bulk larger in our mental life than prospective reference to some foreseen end, it seems an inversion to label " unconscious " the strong affective tone that is dominant at the time-being.

May it not here and now suffice to let the context show in which of the two senses the word " conscious " or " consciously " is used ? I propose to lay more stress on the distinction already drawn between cognitive and non-cognitive reference. I shall thus avoid the question as to what may be

meant by an " unconscious wish." For us it need not arise. Save under some re-definition of the concept, a wish implies cognitive reference to something expectantly wished for. Hence for me a non-cognitive wish would be a " contradiction in terms." If there be a wish, as old-fashioned folk define this word, then, as such, it has cognitive reference ; if there be only what I call non-cognitive reference, with no expectancy, then, by definition, there is no wish.

It will be remembered that, within a mind, I seek analytically to distinguish enjoyment from reference, though both are in being to constitute mind. Enjoyment is what we *are* consciously in the unrestricted sense. But we are also centres from which there is such reference as renders our world objective.

Concerning enjoyment I shall have somewhat to say in the next lecture. With regard to reference —always reference to something objective—I have here, and hereafter, something more to say. And I must try to say it in such wise as shall not put me out of touch with the current experience of human folk.

Apologising for some repetition (*cf.* § 3) I submit that, for our present purpose, three main levels of reference may be distinguished. The top level is that of reflective reference in our rational thought where events are planned out and interpreted under suitable generalisations. The mid-level is that of cognitive reference, as yet unreflective, which characterises mental procedure in intelligent animals and in the human infant. Its advent is concomitant with that of conditioned behaviour in the story of life. The deeper level is that of non-cognitive

reference shut up, so to speak, in the narrow span of the present with no prospective expectancy. It characterises this or that first occasion in the story of a mind. Mental events as items of the stuff of the mind may be going on simultaneously at all levels in the current span of the present.

Top-level or reflective reference is founded on multifarious data provided by much commerce with events during the progressive development of mid-level or cognitive reference. Thus are afforded the items of stuff which shall go together in the new form of substantial unity which characterises rational thought. Similarly, mid-level or cognitive reference of the perceptual order is founded on commerce with events on many and various first occasions. Thus are afforded the items of stuff that shall go together on subsequent occasions in the mid-level form of substantial unity which we call cognitive—in the development, for example, of early reference to objects of naïve acquaintance. But since this cognitive synthesis is mental in its nature, no less mental must be the constituent items of its stuff. And, as mental, they must carry that which is distinctive of mind, namely, reference. This present and not yet prospective reference is at the deeper non-cognitive level.

But these deeper-level items of non-cognitive stuff, which afford bare acquaintance without expectancy, are themselves expressions of a determinate mind-plan. From bottom to top there is one mind-plan with progressive steps of emergence, concomitant with the developing life-plan, interpretable under the give and take of physical influence. There are

two stories of one evolutionary advance—this story to be told in terms of mental reference, that story to be told in physiological terms of stimulation and response.

Only through our inner experience can we learn aught at first hand of the mind-story. But in that inner experience, conscious in the broad sense, all three levels are represented. When top-level synthesis obtains in reflective thought, mid-level synthesis does not cease to obtain. Cognitive integration is still in progress, still affording new data for richer integration in new forms of rational expression. Nor does deeper-level synthesis ever cease to obtain, even in the highest reaches of mental procedure. Again and again it gets expression and carries *its distinctive mark of the unexpected.*

Is this merely theoretical whimsy on the part of a would-be philosophy extravagantly over-sophisticated? I want, if possible, to keep in touch with the experience of human folk. Emphasis is laid on the *unexpected.* Is this contradicted by human experience? Ask the poet, ask the musician, ask the artist, ask the novelist, ask the man of science, ask even the sophisticated philosopher. One and all will reply that, however it be verbally expressed, however we may seek to explain it, in their best moments *something veritably new does just come,* and is accepted as a gift to be greeted with glad surprise. Cognitive data are selectively collected with a definite end in view; reflective thought plays round them and sets them in order; and then, often quite suddenly, often in a flash, what comes *just comes.* What comes is our doing in the sense that it is an

expression of the determinate plan that *we are*; ours, too, in the sense that we have collected the items of stuff and cast them in certain old thought-moulds. And yet somehow the doing is not ours in our cognitive capacity—not ours till it is emergent in deeper-level synthesis, and then ours in that they are one with our deeper nature along a determinate line of advance.

Of course this is not the end of the matter. Artist and man of science, each in his several way, may test, and supplement, and polish with infinite pains, what is given with glad surprise. And what is given may after all prove inconsistent with its environment in the field of reflective thought. The path of every great thinker, it has been said, is strewn with strangled ideas. But from the point of view of emergent evolution this, though not the end of the matter, lies close to the heart of the matter. Here the emergence of the new seems consonant with human experience. And if what takes emergent form is genuinely new, it cannot be explained as a legacy from the past still enduring in memory.

It may, however, be questioned whether it is true to the facts to say that this deeper-level emergence of the new in a reflective field of thought comes with *no* prospective expectancy. When such a man as Henri Poincaré, who has given us his personal experience, was collecting relevant data and grouping them in the light of existing schemata, did he not realise that some further connection must be sought ? His end in view was the solution of a problem. This he awaited in expectant hope before it suddenly came. That no doubt is so. Such a general atti-

tude characterises the reflective level of reference. But what is expectantly looked for is *some* solution ; *this* solution, in so far as genuinely new, cannot be expected since it is not yet within a field of reflective reference. One must remember in how large a measure all rational procedure is dominated by anticipation of the future. But the future is still to come ; and, if it come with an emergent difference, that difference cannot be foretold in the same way as a resultant line can be plotted ahead on the method of extrapolation.

One is not so foolish as to contend that scientific discovery, or what is new in artistic advance, comes in the absence of conscious guidance with prospective outlook. This may be requisite to provide the stuff that shall enter into the higher form of substantial unity. What one suggests is, that there is a factor that in the midst of much conscious guidance is none the less beyond and deeper than conscious guidance, though its coming is accompanied by a peculiarly rich thrill of joy, conscious in the wider sense of the word. Or let me put the matter in the form of a question. Are we justified in asserting that the emergence of the new must necessarily imply expectation of what specific form the new will assume when it comes in due course of natural development ?

The reflective level of reference in thought-process is that with which we are most familiar, not perhaps in experience itself at large, but in all our attempts to *interpret* the main features of mental procedure. In speaking of what is genuinely new, one is apt to mean only what is new to human thought. But

in each individual mind, on its progressive voyage of discovery, what is old in the history of human thought is genuinely new in the history of that mind. Much that was emergent in my father and ancestors has emerged afresh in me.

Another question thus arises. We asked whether one is justified in asserting that emergence of the new must necessarily imply prospective reference to the form that *it will assume*; we now ask whether we are justified in asserting that it must necessarily imply retrospective reference to the form that *it has assumed* in foregoing members of the race.

Both these questions have bearing on the manner in which we should interpret the instinctive phase of mental development.

§ 23. *To What is the Word "Instinctive" Adjectival?*

It is part of my thesis that, in consonance with the foundational duality of nature diversely expressed in life and mind, two stories may be told of the course of events in any given organism. There is a life-story to be told in physiological terms of stimulation and response subject to the recognised laws of action and reaction under physical influence. There is also a mind-story to be told in terms of enjoyment and of reference. Distinguishable as are these two stories, they deal with one natural course of advance in events. Every episode in the one story has its answering episode in the other story. The concept of emergence is applicable no less to events considered under the attribute of mind than to what

are substantially the same events considered under the attribute of life. From first to last in their evolution, life and mind go hand in hand. There is, in each individual, progressive development of enjoyment and of reference no less than progressive development of physiological integration in the body.

On this hypothesis, behaviour as here defined belongs to the life-story. But we commonly speak of certain modes of behaviour as instinctive. Thus we may say that nest-building in birds is instinctive. To what is the word " instinctive " here adjectival ? Is it adjectival to an episode in the life-story and, therefore, to be interpreted in terms of stimulation and response ; or is it adjectival to an episode in the mind-story and, therefore, to be interpreted in terms of enjoyment and of reference ? It will justly be said that, on a two-story hypothesis, it must be one *or* the other. I shall be posed by a dilemma. " If you elect to define behaviour as action which is determinate in what you call the attribute of life, and if you speak of certain forms of such behaviour as instinctive, it is clear that your interpretation of instinctive behaviour cannot be aught else than physiological. If on the other hand you elect to apply the word ' instinctive ' to an episode in what you call the mind-story, it is obviously inapplicable to ' behaviour ' which you tell us belongs to the life-story. To what then, on your view, is the word ' instinctive ' in strictness applicable —to an episode in the life-story, *or* to an episode in the mind-story ? "

I reply without hesitation that, on my view, it is in strictness applicable to an episode in the mind-

story. The expression, "instinctive behaviour," like many other expressions in common parlance, is, as I use it, elliptical. It will clear the ground, therefore, to state the problem before us in less elliptical form. There is an instinctive phase in the story of mind which is closely connected with certain forms of behaviour in the story of life. In virtue of this concomitance it is permissible to keep touch with familiar usage, and transfer the adjective "instinctive" to the kind of behaviour with which it is in intimate alliance.

On this understanding two questions arise. (1) To what distinguishable modes of *behaviour* is the word "instinctive" applicable in this elliptical sense? (2) What distinguishes instinctive *experience* in the story of the mental development of this or that individual mind?

The answer to the first question must be given on the basis of pretty direct inference from careful plain-tale observation. In animal life, say that of birds, it is to the trained field-naturalist that one must turn for information with regard to the facts to be interpreted. The closer he can keep to plain-tale recital of fact the better. But there must be some agreement as to the kind of behaviour that is to be called instinctive. Is there common agreement? Perhaps not. Then it is incumbent on each of us who have made instinctive behaviour the subject-matter of special inquiry to state clearly, without laying down the law to others, what *he* means by the word "instinctive."

First, then, we have to get at that which is to be interpreted when we speak of this act, or series of

acts, as instinctive. I submit as a first approach that is convenient and historically justifiable to apply the word " instinctive " to the act, or sequence of acts, which at some stage of the individual life-career appears as in some sense new—let us say in the same sense as the blossoming of a plant is new. It is the determinate outcome of the unfolding of the inherited organisation under the incidence of determining kinds of external influence.

But this does not suffice. It may be said that all the behaviour of plants, and of many animals lowly in status, is, when it first comes within the field of observation, new in the individual though it is old in racial routine ; and it may be asked : What behaviour in the higher animals is not in this sense new ? If, then, the word " instinctive " is to be adjectival under convention to *some* modes of behaviour *and not to others*, we must appropriately characterise these others from which the " some " may be distinguished as instinctive ; and we must indicate the status of the animal in which both " some " and " others " obtain.

Here I submit that the outcome of inquiry into the nature of conditioned behaviour, discussed in the foregoing lecture, should be taken into consideration. There are certain animals—provisionally, so far as we know, those only in which a synaptic nervous system has been evolved—in which there do seem to be two distinguishable types of behaviour.

In such animals some of the behaviour is conditioned, and some, in so far as it is not thus so conditioned, is primary and original as the determinate outcome of the unfolding of inherited

organisation under the incidence of determining kinds of external influence. May not this afford at least a basis for distinguishing as instinctive (in those animals in which *both* types of behaviour are in evidence) those acts which on their first occurrence seem to be original in so far as they are not the outcome of prior conditioning ?

It may be urged that on this hypothesis there is nothing *in principle* to differentiate the behaviour of a bird that builds its nest from that of a flowering orchid in ways which the botanist describes. It may also be urged that there is nothing here that differentiates, in orchid or bird, the natural origin of behaviour from that of structure. It may be urged in effect that what such treatment comes to is this : The structure of the bird—let us say its plumage—and nest-building, as an example of its instinctive behaviour, just come in the course of nature ; the one no less than the other is susceptible of physiological interpretation. In each case the biologist is faced by a difficult problem. How comes it that specific differentiation in plumage on the one hand, and in nest-building on the other hand, characterises the goldfinch as contrasted with the marsh-warbler ? In each case we must turn to the biologist for a solution of the problem so far as it can at present be solved.

I accept these implications of biological treatment at what we may call the deeper level of life which is common to plant and animal, common also to structure and function. Thereupon it may be asked : What difference in the course of events can the accompaniment of another story—that which you call the mind-story—make ?

We have here to realise that, as I have tried to show, there is a difference *in the life-story itself* when conditioned behaviour comes on to the scene in the natural advance of life-progress. On the deeper level of life which is common to plant and animal, to structure and function, there supervenes without superseding, a mid-level of life in which conditioned behaviour obtains.

Now where we are dealing with the life-story we proceed upwards from deeper to super-evolved levels ; and the top level of cortical function which accompanies reflective reference is that of which, owing to its bewildering complexity, we know least. But when we are dealing with the mind-story we must proceed downwards from the reflective level of which we know most. What have we found at this top level ? We have found that when the requisite data have been provided, and not till then, there comes an emergent integration in a new form of substantial unity, and that this seems to be of deeper-level origin—ours by gift from the determinate mind-plan which makes us what we are rather than ours through any conscious guidance at the time-being. It is difficult verbally to express what it feels like. But I think that "something quite new, something quite unexpected in just this form," does in some measure emphasise salient features.

Such too, I submit, is what the instinctive feels like in mid-level experience. Such may be its character in the bird's mind-story. It arises at a stage of mental advance when cognitive data are present in some abundance ; for it is a new emergent

synthesis that includes such data. Even the chick when first it pecks has reached a modest level of cognitive development. Far higher is the level of cognitive development in the adult bird that builds a nest. But in the midst of all this—in the midst of so much that is familiar and shot through and through with prospective reference—there emerges something quite new, something unexpected in this instinctive form.

§ 24. *Instinctive Knowledge. Literary Psychology*

The conclusion to which I have been led is that whether we speak elliptically of instinctive behaviour within the life-story, or emphasise instinctive experience in the mind-story, a characterising feature is that, on the first occasion of the occurrence, it is such as to give a form of substantial integration that is new and unexpected on the basis of prior experience.

The stress here, as so often elsewhere, is on substantial integration. It is this that is new; this that is unexpected. The items that in synthesis constitute its stuff—or very many of them—are not in themselves new; they are the outcome of experience up to date; they carry expectation begotten of the cognitive knowledge so far acquired. The bird that builds a nest has pretty extensive experience with reference to familiar objects and situations; and we may, I think, say that unless he had attained the requisite cognitive status, nest-building would not be in evidence. What is in evidence when the bird first builds is a form of substantial integration

which brings, as I suppose, the same kind of glad surprise as, they tell us, came to M. Poincaré with the solution of a scientific problem, to Coleridge with *Kubla Khan*, and to George Eliot when she committed to paper the crucial interview between Rosamond and Dorothea.

May we, then, say that instinctive integration, and its expression in act, comes by nature and not through knowledge? If so, what for us does this mean?

I must put it very briefly. Much has been written on the distinction between nature and nurture. By knowledge I mean that which comes under nurture. It is that which is learned either in cognitive fashion through associative revival, or in reflective fashion when there is an end in view to be attained by such learning. It is through learning in cognitive fashion that conscious guidance enters on to the scene of mind. It is through learning in reflective fashion that conscious guidance becomes fully purposeful with an anticipatory plan in mind for the attainment of an end as yet unattained. If we emphasise an anticipatory plan in mind (or, in brief a *fore-plan*), rehearsed in advance of overt action, cognitive knowledge not yet reflective develops in the absence of such a plan. But it always carries prospective reference with some expectancy of what will come; and this implies revival of what has come on prior occasions like that which is current.

The stress, then, is on the indissoluble connection between knowledge, as thus characterised, and conscious guidance. But that which comes through

nurture and subject to conscious guidance furnishes only the top-story and the mid-story of the mind, and these only in part, even in us where conscious guidance has its maximal development. A far larger proportion of our mind is ours by nature and not through the knowledge that is gained under nurture. And, as what we are by nature, it is not made ours through our conscious guidance, though it is accompanied by a peculiarly rich form of consciousness in the broader sense of the word. Hence what comes by nature—at the reflective level under the adage *poeta nascitur, non fit*—comes as new and unexpected. In like manner we may say of the bird, as songster, that such is he born, not initially made under conscious guidance, cognitive or reflective.

My position, in its comprehensively philosophical setting, cannot be fully understood without bare mention at least of the issue postponed to the concluding lecture. What comes by nature is in my belief a Divine gift, manifested in others and revealed in oneself in the determinate advance of natural events. If I may so put it, emergent evolution is from first to last a revelation and a manifestation of that which I speak of as Divine Purpose. But there are those for whom the concept, or as they may say the pseudo-concept, of Divine Activity is inadmissible. For them the concept of determinate plan of events, as in some sense given, must suffice. So be it for us, too, here and now. We must not prejudge so grave an issue. Here and now, therefore, I am content to say that what we call " instinctive " just comes as an instance of the determinate

plan of advancing events, and breaks in on much that is already subject to conscious guidance as a new and unexpected expression of the nature that lies deeper than nurture.

If, then, knowledge comes only through nurture, and if that which comes by nature in instinctive form breaks in on experience, and is not the outcome of the knowledge in the midst of which it appears as new and unexpected, it is clear that, on this hypothesis, one should not speak of instinctive knowledge.

But there is a different hypothesis, and though it is one that I am unable to accept I must try to state what seem to me to be its salient features, and to indicate very briefly in what respects it fails, in my judgment, to make good. Under the able advocacy of Professor M'Dougall and others it has wide popular currency, in large measure, as I think, because of its dramatic appeal.

Perhaps its most salient feature is the claim that instinct affords an example of inherited knowledge. Hence instinctive procedure is at the cognitive level of mental development with emphasis on prospective reference. Nay more, notwithstanding sundry rather perplexing qualifications, an instinctive act is, on this hypothesis, distinguishable with difficulty, if at all in principle, from an act executed under reflective reference, in that it affords evidence of an anticipatory plan in mind or fore-plan on the part of the agent.

Now whether, when the bird builds its nest, there is or is not a fore-plan in some measure rehearsed in advance is, and must remain, a matter of infer-

ence. My own position is, as I shall hereafter try to show, that such a fore-plan envisaged in mind is a very late product of mental development. Hence in accordance with our evolutionary canon (*cf.* § 10) we should not invoke its aid in interpreting that which is, as I think, at a lower stage of mental development.

But we must dig deeper. If there be inherited experience in the Bergsonian sense of stored memory-images and the like, there is, on what I call the first occasion of instinctive procedure, abundant opportunity for the revival of ancestral knowledge. The so-called first occasion, say of nest-building, is only new in the life-history of this or that goldfinch or marsh-warbler. There is nothing really new and unexpected for a mind that carries a record of its "illimitable past" which is present and operative at the moment of action. But is there convincing evidence of any such ancestral memory? Expert opinion is divided. I am one of those who think not (*cf.* § 19). I am bound, therefore, to proceed on what I judge to be the verdict of not-proven.

I can deal only, and in utmost brevity, with what seem to me to be the basal principles of such an interpretation of the instincts as Mr M'Dougall offers. Is it not set forth at length in his works? He starts, as we must all start, with some analysis of what is given for interpretation as a complex whole. One looks round on animal life and descries this or that distinguishable outcome of behaviour—the getting of food, reproduction, the rearing of young, attack on or escape from other animals, and so on.

But this outcome in each case implies, it is said, some purposeful end. What then does analysis disclose? Psychic entities—the instincts—that have these several ends in view with hormic urge to their attainment. There may be a dozen or more of them. Take any two—say the instinct of combat which urges to attack, and the instinct of escape which impels towards shelter and hiding. They may be in " conflict " since they compete for possession of the " motor mechanisms " they must use. Indeed the taking *possession* of body as instrument by this or that instinct is the dominant note.

Well, it may be so. There may be such animistic spirits who severally or in alliance contend for mastery and supremacy. But that way lies what Professor Santayana speaks of as literary psychology.

Is not this, however (it may be said), a legitimate refinement of the method of treatment with which the dramatist has made us familiar? Does he not show us lust, ambition, and avarice, in conflict and contending for mastery on the stage of each human mind? Yes. But for purposes of art? or for purposes of scientific interpretation? I think he might reply: It is my aim, as dramatist, to give literary form to episodes of human interest. My interpretation is professedly artistic, not scientific.

In the realm of poetic artistry literary or dramatic psychology is quite in place. The mind is pictured as a stage on which certain psychic entities as *dramatis personæ* enact their several parts. In Professor Macneile Dixon's poetic treatment of *Tragedy* (1924) this method of dramatisation is admirably in line with the subject-matter under review. " For

consider the world within us and its innumerable constituents—intelligence, will, memories, impulses, fancies, attachments, passions—a system of elements in everlasting motion, each and all present in varying degrees of intensity at each succeeding moment, yet none measurable by any scale of weight or value ; clusters dissolving and again combining to form new alliances, their patterns altered by every change of external circumstance or current of attention, by every breath of instincts—offensive, defensive, playful, filial, parental ; so that fear, joy, grief, hope, pride, pity, patience, disgust, fortitude, admiration, and all the rest, each affected by the group to which it then belongs, influenced by the interest that for the moment rules, weave within the soul their eternal dance of intricacy inconceivable, taking to themselves now one partner and now another, executing new steps and figures in ever-altering communities" (pp. 153–54).

This is not scientific psychology. It may be, as Mr Dixon claims, something much better. In any case it is something quite other. It illustrates what is meant by literary psychology, with no hint of disparagement within the realm of artistry *C'est magnifique, mais ce n'est pas la science.* But is what Professor Dixon says with so sure a literary touch meant to be science ? Is much of the charming imagery of M. Bergson literature or science ?

§ 25. *Are there Instinctive Fore-plans?*

Difficult as it is to avoid the use of language appropriate to literary and dramatic presentation, we

should, I think, in matters scientific, strive to do so. A scientific statement is one that may be taken quite literally even when it is couched in hypothetical terms. But when Lowell speaks of the rich buttercup that holds up its tiny polished urn "filled with ripe summer to the edge," or when Keats tells us that the sad spaces of oblivion "now saw the light and made it terrible," I do not feel called upon to take these statements literally. And if a popular writer on natural history says that jealousy, or emulation, or sexual ardour, or coyness, or a spirit of pugnacity, makes this or that bird act thus or thus, or if he speaks of some long "dormant" instinct as suddenly "awakened," I raise no objection. But I do wish to know whether I am to take these statements literally or not.

Now I do take quite literally the statement that from first to last there is in bird, beast, or man, one life and one mind, developing on one plan. But this life and mind changes from birth (and before birth) onwards; changes too from moment to moment, from hour to hour, from season to season, often in rhythmic fashion, with major, minor, and subsidiary rhythm. And I seek to find the ground-plan of their development. In the midst of all these multifarious changes there come, under plan, those instances of the new and unexpected which I call instinctive. But in the story of mind they come in such wise as to be consubstantiated with much that, as revived, is in a sense old in the current experience of the time-being. And, in the story of life, this or that new item of behaviour enters into the tissue of responses in process of conditioning.

No doubt this presents a difficulty with regard to the application of the word "instinctive." Let us assume that when first a swallow leaves the nest and is freely committed to the air it has a new form of instinctive experience, since never before did it fly with just this co-ordination of wing-movements. We may, then, say that the ground-plan of flight is instinctive. Forthwith this behaviour links up, hour by hour, with the whole life of the bird—links up, too, with the developing system of enjoyment and of reference which constitutes the bird's mind. How, then, shall we designate the perfected flight of the swallow? In the life-story it is elaborately conditioned and has secondary connections with many other primary responses. In the mind-story it has contributed in multifarious ways to the development of cognitive reference. In the light of this reference it has gained many delicate nuances of action and experience on the wing. Is it still to be called instinctive in virtue of *its original manner of entry* into life and into mind? Surely this is a matter of verbal convention. To restrict the use of the word to "first occasion" occurrence only would be pedantic and out of touch with well-established usage.

It must be remembered that what I speak of as *instinctive in its manner of origin* is only one of the modes in which the new and unexpected finds expression. It finds expression, too, at the reflective level, as we have seen, in the man of science and the artist, and is there too quite commonly spoken of as instinctive. Furthermore, in the midst of the cognitive learning through which acts of skill are

established, have not most of us found that one fine morning a new integration comes suddenly on to the scene with a thrill of joy? It may not have come to stay. Cognitive guidance may have again to be exercised in renewed practice, and we must await its coming again. If perchance it does come to stay, is it to be spoken of as instinctive? Is not this again a matter of verbal convention? We have to adapt for purposes of more exact thought a word that in literary usage has many varying shades of meaning. In the adaptation, I suggest the essential point is that, as new and unexpected, instinctive experience comes as part of nature's ground-plan in the midst of that which has been learnt under nurture's superimposed acquaintance with events. Let us shun the error of regarding that which is instinctive—however defined—as, in some fashion, cut adrift from the progressive development of the mind.

On this understanding instinctive procedure—for example in such episodes of bird-life as "securing a territory," outburst of song, "courtship," nest-building, rearing of young, migration, and so forth—is an expression of nature's ground-plan in life and mind, not in life only but also in mind.

But here arises what I deem to be a crucial question. Does the presence of an instinctive ground-plan imply the presence of an anticipatory fore-plan? Is there precurrent rehearsal of the acts to be subsequently carried out in executive behaviour? I think not. I regard a fore-plan as distinctive of the reflective level of mind.

In human life, under reflective reference, there is

often unquestionably rehearsal of coming events in a fore-plan wherein what is to be done is envisaged in imagery. In the eighth lecture we shall consider the nature of practical fore-plans of action.

We may, however, here turn aside to glance at procedure that is learnt under cognitive reference, such as " running a maze " by a rat. Associative clues for turning this way or that are established, and may receive interpretation under the rubric of conditioning. But, even here, it is open to question whether the rat proceeds under fore-plan; whether, when his lesson has been learnt, he *rehearses in advance* coming phases of his performance, and *anticipates* in imagery the clues on which he will presently act. There is, moreover, in all such examples of learnt procedure, ample opportunity for revival based on prior experience.

But if the ground-plan of instinctive procedure bring something new and unexpected on the first occasion of its full execution in act, this is something other than that which is anticipated under pre-current rehearsal in advance, if such there be. In so far as new and unexpected, it may come to the bird in some such wise as the Rosamond and Dorothea scene came to George Eliot—unrehearsed, as she tells us, in advance. If, on the other hand, it be already present in fore-plan, it brings nothing substantially new and unexpected. Ancestral experience stored in memory is invoked to furnish, in imaginal fore-plan, expectation of that which is nowise new. The crucial question comes down to this: Is there evidence of stored memory-images retained in ancestral experience?

If this be regarded as a crucial issue, there are few episodes in bird-life that present it in a more crucial form than that which Mr Eliot Howard speaks of as "securing a territory." Few equal him in accuracy of observation, in plain-tale description, and in cautious interpretation with due regard to life-story and to mind-story. He will shortly, as I understand, give a further account of the conclusions he has so far reached.

It is not for me to poach on his manor. We have to realise that, in plain-tale, male birds—or in some species a mated pair—do occupy a "territory," varying its size according to the kind of bird, and differing in shape according to circumstances, the lie of the country, occupancy of other territories, and so forth. So far as cognitive reference obtains, there must be some clues, some external stimulation, some internal physiological poise, the concomitants of which serve to determine the observed behaviour. These cognitive factors must be evaluated, so far as is possible. But apart from these factors there is a ground-plan of instinctive procedure, analogous to, and of the same nature as, the ground-plan of embryonic development.

What does this mean? We are prone to suppose that all overt behaviour, instinctive or other, must be interpreted, if interpreted at all, in terms of conscious guidance with prospective reference. Is this a justifiable inference from the facts of plain-tale observation? May not the ground-plan of behaviour be of like nature to that of the development of bodily structure? May not the securing of a territory with pretty definite boundaries have

its analogue in the formation of a bone with its very definite shape? Here, too, we have a ground-plan. We observe how the cartilage-model takes form in the midst of surrounding tissue; we may watch the subsequent ossification in the bird's femur. Is there any fore-plan in the mind of the organism? I think not. And yet with what exquisite nicety are its boundaries preserved! Do we yet know what are the exact conditions under stimulation and response?

And so, it will doubtless be said, the interpretation is physiological only. Not so, I reply; it is a two-story interpretation.

Must I, once more, try to render clear what this means? I suppose so, and perhaps hereafter more than once again. Some people find it hard to grasp what it *can* mean. For me it means this, that from first to last every physiological poise is also a poise of enjoyment and of mental reference, and that every change of the one has its answering change in the other. The whole business of life and mind is interpreted in this two-fold regard; and the contention is that those who sunder these concomitant aspects—those who say "physiological only," and those who say "mental only"—are, in my judgment, mistaken.

LECTURE VI

Pleasure and Pain

§ 26. *Getting and Coming*

What we speak of as imagery at the reflective level of mental development is in large measure schematic. One has an anticipatory plan in mind, and it is in imagery begotten through revival of past experience that we—or some of us—rehearse in advance the action we propose to take. The part played by such imagery, enlisted in the service of reflective procedure, varies much in different persons. It may be predominantly visual, or auditory, or motor (kinæsthetic) and so on.

We should here distinguish the imagery that comes unbidden—for example, when I have a visual image of a blackbird leaving the laurel-clump when, seated at my desk, I hear his startled cry—from that which may be gotten of deliberate intent, for example when, of set purpose, I try to "visualise" this morning's breakfast-table, or to recall the tones of my host's voice. I take it that intentional imagery gotten on purpose to give concrete embodiment to some anticipatory plan of procedure is distinctive of the reflective level of mental development. And, in my personal experience, such intentional images are much less vivid and less sharply defined than those which come unbidden.

At the cognitive level—above which the mental development of the bird and most beasts may not reach—all current reference to objects and situations is shot through and through with unbidden images many and various, which contribute to the guidance of behaviour in so far as they prospectively forestall events which will come in the course of some routine of which the current situation is an instance. Guidance of action implies such prevision.

I propose now to concentrate attention on the enjoyment which is no less a distinctive feature of a mind than is reference, cognitive or other.

Thus far, when I have used the word "enjoyment" I have generally done so irrespective of whether it be agreeable or the reverse—tacitly taking for granted that it may carry pleasure or pain. We can do so no longer, for pleasure and pain count for very much in life with enjoyment; and, for us, be it remembered, there is no life without enjoyment.

Some preliminary points may here be noted: First, I shall use the word "pain" or sometimes "discomfort" as the antithesis to "pleasure," and not as restricted to specific "pain-sensations" only; secondly, I shall here and now have chiefly in view the part played by pleasure and pain at the cognitive level of reference; thirdly, I shall for the most part regard the words "pleasurable" and "painful" as adjectival to the current phase of an enjoyment *as a whole* in its substantial unity; and fourthly, I make bold to include *both* under enjoyment, speaking perhaps on occasion of the enjoyment as being *positive* or *negative*. Here common sense will jib. We enjoy, it will be said, only that which is pleasur-

able; if an experience be painful, or unpleasant, or disagreeable, there is no enjoyment but something else which is the very antithesis to enjoyment. Well, I beg leave to include this "something else" under enjoyment, in the hope that those who wish to understand what I seek to express will overcome their not unreasonable objection to this usage.

I suppose that, on this understanding, some of us realise that there are occasions on which enjoyment, pleasurable or the reverse, seems just to come; and other occasions on which we so act as to seek and, if it may be, to get it, if it be pleasurable. What we seek under conscious guidance is *some situation* in which we expect it to come. Let us then consider a little more closely this getting and coming.

Do we sufficiently realise—even those of us who have learnt to interpret physiologically as well as psychologically—do we sufficiently realise that the direct bodily outcome of an exteroceptor pattern, though we may seek to get it under conscious guidance, as thus gotten just *comes* under external stimulation, since such is our bodily nature; and that the concomitant enjoyment, pleasurable or painful, in like manner just *comes?* We may seek to get the view from yonder hill-top; we may go to his haunts to hear the Blackcap sing; we may pluck a flower to get its fragrance, or a strawberry for the sake of its flavour; but given the pattern of sight or sound, of scent or aroma, the way in which our enjoyment is affected—that is, *we* are affected then and there—is likewise just given and taken as a gift. Primarily, and apart from such referential

meaning as may have accrued, the given enjoyment is the mental concomitant of the immediate outcome under appropriate stimulation.

So, too, in different fashion with behaviour, the naïve enjoyment we have in acting. It, too—apart from expected consequences—it, too, as the immediate experience in behaving, just comes, is directly given, with the stirring of the receptor pattern of motor changes in progress. I repeat the expressions " just comes " and " is directly given," in lack of better, to emphasise the fact that in each case—in all instances of initiation by receptor patterns as such—(1) the physiological outcome is what it is in accordance with the nature of the organism, and (2) the mental concomitant in enjoyment is what it is and as it is, whether the getting of such patterns is consciously guided or not.

I am not denying any of the cognitive reference which may also be inferred. But I revert to that which I have spoken of as first-occasion behaviour. When a duckling first swims—and I contend that there is a first occasion on which *that* duckling first swims—there is presumably (*a*) enjoyment due to the stimulation of water on the breast ; there is (*b*) enjoyment arising from the current process of behaving in this manner ; and there is (*c*) enjoyment in the changing balance of many and various inner events—modifications of heart-beat, of the respiratory rhythm, of glandular activity, and so forth. All this gives an integral whole of enjoyment then *first* given in this form of synthetic entirety. All this just comes on the first occasion. There is little or no conscious guidance in the getting.

But in us human folk the getting bulks so large in our reflective view that it is apt to overshadow, and to hide, the coming. All day long we so act as *again* to enjoy that, the like of which we have already enjoyed. We go to the theatre, or watch a cricket match, or "listen in," with that end in view. None the less—even when we commonly speak of consciously seeking pleasure—we seek it indirectly rather than directly. We deliberately place ourselves in the midst of those circumstances in which we expect it to come. Thus we take a warm bath with expectation of what sort of experience will arise. Here, of course, there is plenty of conscious guidance in the getting. We go to the bathroom, turn on the taps, and so forth. We step into the bath and *then* the skin-stimulation with consequent physiological effect just comes—the concomitant enjoyment in mental regard comes also. Our expectation is fulfilled with pleasurable satisfaction. Take an instance at a far higher level in our life-with-enjoyment. My witty friend is a bidden guest. His visit *was* an end in view; and now it *is* a *fait accompli*. But the enjoyment stirred by his brilliant talk, though part of my end in view in inviting him, is not in the same sense within the sphere of my conscious control. One cannot make *it* come in quite the same way as one got *him* to come.

In thousands of instances we *find* enjoyment in the course of life-behaviour; under conscious guidance on subsequent occasions we *seek* to get it *again* if it was pleasurable, or to avoid it if it was disagreeable. But thus far I have sought to lay

emphasis on the seeking (or avoiding) of *the situation* similar to that in which enjoyment has been found and will be found again under normal routine. In this sense the seeking of enjoyment is indirect under the so-called " paradox of hedonism." Thus far, then, the position is: When under conscious guidance we get the appropriate circumstances, then, in these circumstances, the enjoyment just comes; this coming is beyond our conscious control.

But the plain man may ask: What does all this come to? Take a concrete instance. I am going to a concert this evening and I am looking forward to the " positive " enjoyment it will bring. I am not only thinking of " the situation," which, by taking a taxicab, and entering the hall, I shall no doubt reach " under conscious guidance." I am looking forward to the pleasurable enjoyment as such that I feel sure will then " just come " as you put it.

But I ask him to consider in some further detail his procedure. Is it not somewhat thus? (1) He may picture in anticipatory images the concert-room as he supposes it will be this evening, or he may " think of it " without much imagery; (2) he pictures himself there, or at any rate feels what it will feel like to be one of the audience; (3) he anticipates *now* how he will enjoy hearing the music *then*. I do not mean that he does first this, then (after a pause) that, and thereafter the other; for what we distinguish in analysis he experiences as a confluent whole. Furthermore, not only does he thus transfer himself into the midst of a future situation which, as he expects, will be of a certain kind, he also transfers the imagined situation to

the current present as he rehearses its progressive development in advance of this evening's performance. In a measure he enjoys here and now something like that which he expects to enjoy then and there. Whether this analysis is fairly correct or not, it is safe to say that the process, simple as it seems, is pretty complex ; and that it is of the kind that belongs to the order of reflective procedure.

§ 27. *The Push of Discomfort*

At the reflective level of mental development one may, with more or less imagery in anticipation of the event—probably more as child than in later life—look forward to the enjoyment which, as he hopes, will come when he gets to the concert-room. What about the dog ? On what understanding may we say that, on seeing his master hat and stick in hand, he looks forward to the enjoyment of a walk ? He may rehearse future events in a fashion not unlike that of the plain man ; or he may not. And what about the bird ? Does the rook, setting forth for the feeding-ground, look forward to enjoyment in eating the succulent morsels he will find there ? And if so, does he, too, rehearse in advance, before he leaves the nesting-tree, the kind of experience which the day's foraging will bring ?

Let us be content to surmise that throughout the day's foraging he is guided *from moment to moment* by imagery of what is next coming, and that this carries some " foretaste " in enjoyment. The question then arises : Is his behaviour in some sense drawn forward in its course by the pleasure that will

and does come—let us say in the satisfaction of his hunger ?

Permit me here to make a fresh start, taking Mr Bertrand Russell's treatment of the " hunger " episode as our point of departure (*Analysis of Mind*, Lect. III).

The characteristic mark by which we recognise a series of actions that display hunger is, he says, not the animal's mental state which we cannot observe, but something in its behaviour. This observable trait we will call " hunger." Generalising, then, from what occurs in the case of hunger we may say that " desire " in an animal is displayed in a cycle of actions having fairly well-marked features. There are (1) preliminary movements likely to lead up to a certain outcome ; these movements (2) continue until this outcome is reached ; after which there is usually (3) a period of comparative quiescence. It is by such " behaviour-cycles " that animals are *prima facie* distinguishable from ordinary matter. The " purpose " of a behaviour-cycle is the outcome that is reached. An animal is, then, said to " desire " the " purpose " of a behaviour-cycle when action is in progress.

The scheme so far is professedly behaviouristic. The observed routine is discussed on the plane of life. Conscious guidance, or even any kind of enjoyment, if such there be, is kept out of the picture. The words " hunger," " purpose," " desire " are so redefined as to be emptied of nearly all their traditional meaning in connection with conscious guidance.

Coming now to human beings, and to what we

know about our own actions at the cognitive level, it seems clear to Mr Russell that what in us sets a behaviour-cycle in motion is some sensation of the sort we call disagreeable. In the case of hunger, whatever else may follow, we have first an uncomfortable feeling inside. We must take this quite naïvely and disregard the reflective attitude which may lead one to say " I am hungry," for we are still concerned with primitive " desire," felt indeed, but in that form which discloses man's affinity to his animal ancestors.

This primitive desire seems, Mr Russell says, to be *a push and not a pull*, an impulsion away from the actual, rather than an attraction towards the ideal. It must, therefore, be distinguished from " conscious desire " (reflective desire) which is complex and made up partly of this essential factor and partly of " beliefs " as to what we want.

In mental regard, then, we have " desire " as immediately experienced. And in this regard Mr Russell says that certain sensations and other mental occurrences have a property which we call discomfort. Sensations which have this property cause such bodily movements as are likely to lead to their cessation. When the discomfort ceases, or even when it appreciably diminishes, we have sensations possessing a property which we call pleasure. Pleasurable sensations either stimulate no action at all, or at most stimulate such action as is likely to prolong them. Thus, when hungry animals have reached food and eaten it, their discomfort ceases and their sensations become pleasurable. It *seems* mistakenly as if the animals had had this situation

in mind throughout, when in fact they have been continually pushed by discomfort. It is in virtue of this property of a sensation or other mental occurrence that it stimulates voluntary or reflex movements, and is in that sense a *prime mover*. The mental property of discomfort is a "causal property."

Now it forms no part of my purpose to criticise Mr Russell's analysis of the hunger episode. The purely behaviouristic sequence of events seems to be (1) hunger, as an organic condition, more or less continuous till it ceases; (2) restless behaviour likely to secure food; (3) finding the food; (4) eating it; (5) a quiescent end-state as outcome of the episode. But accompanying this behaviour-cycle is an experience-cycle with initial discomfort as a property of hunger sensations and perhaps other mental occurrences under (1), and pleasure as a property of the end-state sensations under (5). And throughout there is the causal push of discomfort. Many questions of detail may, no doubt, be raised, for example, whether the initial hunger sensations have always the property of discomfort, whether there may not be more pleasure in eating the food under (3) than in the end-state of quiescent satisfaction under (5), and so on. But these, though not unimportant in the analysis of mind, may here be left on one side. Mr Russell wants to get to the heart of the matter. And this, I think, lies in the contention that broadly speaking—and apart from the "belief" which is also present in "conscious desire"—it is the causal push of those events which have the mental property of discomfort that drives

the course of behaviour towards a pleasurable end-state which is unforeseen.

It is here, I think, that the behaviourist—and not only the *radical* behaviourist—joins issue. If I rightly gauge his position it is this. He may say: I accept your description of the advance of events within a behaviour-cycle; we all agree that they run their course in a field of events which is interpretable in terms of causation as this word is used in science; I am quite prepared to admit (though it is no part of my business to assert) that certain events in us have what you speak of as a property of discomfort; but I find no evidence that the presence or absence of this *mental* property, as such, makes *any causal difference* in the course of *physical* events. If there be such a property it is an accompanying property and in no valid sense a driving force, or what you call a "prime mover." To paraphrase your own statement: It *seems*, mistakenly, as if the animal were pushed by mental discomfort, when in fact the behaviour-cycle runs its course in such wise that an interpretation in terms of "whole-action physiology" is adequate and sufficient (*cf.* § 8).

The issue thus raised may be restated in the form of a question: Does enjoyment, as such, push or pull in accordance with its pleasurable or disagreeable "property"? The behaviourist, radical or other, replies that it does neither. From first to last—from the lowest animal to which it may be attributed on inferential grounds, to the human person in whom it is a matter of direct acquaintance—it is no other and no more than a mental accom-

paniment or concomitant of physiological events. As such it does nothing ; it has no *locus standi* in the physical field of energetics. Mental events are never, save in some metaphorical sense, "prime movers."

I am, on this issue, in full agreement with the most radical of behaviourists. I, too, contend that neither does pain or discomfort push nor does pleasure pull. And yet I believe that conscious guidance does count for progress, and that *au fond* all conscious guidance at the cognitive level is towards pleasure and away from pain or discomfort.

But how (it will be asked) can that be so ? Let me lead up to the point of view I seek to make comprehensible. I submit that guidance of behaviour, in such wise that one reaches a situation in which pleasurable enjoyment comes in the natural course of events, does not necessarily imply that one is pulled by pleasure. Nor does guidance in such wise that one avoids such situations as will be disagreeable, or escapes from those which are already disagreeable, imply that one is pushed by discomfort, if the "push" or the "pull" imply dualistic interaction —action under physical influence. There is, at any rate, another way of interpreting the facts. Take an instance fairly high up in our mental life. If a mariner shape a course to the sunny south and leave behind him the inclement north, he is in no strict sense pushed from the north or pulled towards the south. At some mid-point of his course when there are no longer inclement conditions and not yet the full sunshine conditions, he mentally rehearses the course of events. He views them in schematic

plan, looking now backwards and now forwards in a condensed epitome. The northern climate *was* inclement; the sunny south *will* bring pleasurable enjoyment. What "was," is *now* contemplated with some aftertaste of discomfort; what "will be" is *now* contemplated with some foretaste in enjoyment. And the positive or negative nature of *this present enjoyment*, as concomitant with specific physiological events, counts in guidance of action.

§ 28. *Consonance of Welfare and Pleasure*

It can scarcely be doubted that, broadly speaking, there has arisen in the course of evolutionary progress that which at the cognitive level may be called consonance of welfare and pleasure. Is this interpretable under concomitance?

I use the word "welfare" to denote that normal or perhaps super-normal equilibrium of organic events which leads us to say that the organism is healthy and vigorous—adaptively (*a*) receptive of and (*b*) responsive to influence from without, while (*c*) multifarious physiological processes run their course smoothly in orderly and rhythmic sequence.

In this sense one may speak of the welfare of plants. But one does not commonly do so. I think that this is because welfare is *reflectively* regarded as an end in view to be attained through endeavour. And few of us credit the plant with such an end in view.

I ask leave, then, here and now, to use the word "welfare," without any such implication, to denote that organic poise which leads us to say that the

organism is healthy and vigorous. Thus used it falls for consideration within the story of life, as distinguished from the story of mind.

Our reiterated contention is that accompanying this life-story there is also and always a mind-story. And within this mind-story I distinguish the progressive evolution of reference, and, concurrent therewith, a progressive evolution of enjoyment which carries what we may call " positive signature " in pleasure, and " negative signature " in pain or discomfort. This affective signature attaches to the unitary whole of enjoyment at the time-being, and is in the main agreeable in so far as it changes in a positive direction, disagreeable in so far as it changes in a negative direction.

Taking now reference, cognitive or other, for granted, taking, too, welfare as life-poise, and enjoyment as an accompanying mind-poise, the questions are : Is there consonance of life-poise in welfare and pleasurable mind-poise in enjoyment ? If so, how has this consonance been reached in the course of evolutionary advance ?

Let me clear the ground by saying frankly that we do not as yet know what is the exact nature of those physiological processes which have for their concomitants pleasure or pain respectively. Many more or less promising suggestions have been made. But concerning them we may say, with Professor M'Dougall, that " no one of them has secured general acceptance." This means for us that the problem is still unsolved. But when Mr M'Dougall adds the words " or deserves to secure " general acceptance, I think he implies that the search for *any* " alleged

concomitants" is a vain and futile quest. In accordance with his hormic theory, the connection of pleasure with success in attaining, and of displeasure with failure to attain, a conative end in view is "an ultimate fact" of animistic mind.

I proceed, however, on a two-story hypothesis which is avowedly different from the hormic hypothesis. Neither is more (or less) hypothetical than the other. Each claims acceptance on the part of all reasonable people whose training has fitted them to pass judgment on so difficult an issue. Each adduces evidence and argument in support of his claim.

Mr M'Dougall refers in the *Outline* (p. 188) to an argument which he says "has not received the attention it deserves." It is set forth in his *Physiological Psychology* (pp. 158–60). He there urges that "if we regard pleasure and pain as in themselves ineffective, as having no influence upon nervous process and on conduct, we must regard them as merely signs, or reflexions in consciousness, of the occurrence of beneficial or hurtful physiological processes in the organisms."

In view of this expression "merely signs" we may speak of pleasure and pain (or discomfort) as the positive and negative "signature" of enjoyment. On this hypothesis, then, certain different physiological processes are concomitant with certain different modes of enjoyment having positive or negative signature. It is then said that, as signature only, pleasure or pain cannot be causally efficient. That is the hypothesis that Mr M'Dougall, as hormic interactionist, is concerned to combat. And to that end he seeks to place us on the horns of a dilemma.

He reminds us that Herbert Spencer " pointed out that pleasant experiences are in the main beneficial and painful experiences hurtful." And he expresses the opinion that " this principle seems to hold strictly true of the animals," and that " there can be no doubt that it is broadly true of man also." The argument then runs: Since this is so, " the evolutionist finds himself confronted with the following dilemma: either pleasure and pain are efficient causes of appetition and aversion, and therefore have played in biological evolution a part of incalculably great importance, or we must postulate Divine interference with the course of evolution at some early stage of the development of the animal kingdom " ; in other words, on this latter alternative, we must assume that a beneficent Creator assigned pleasure as the mental concomitant of beneficial physiological events, and pain as that of hurtful events.

We thus come back to the consonance of pleasure with welfare. But that such consonance is a principle of universal validity, as Mr M'Dougall here assumes, is contrary to many patent facts of human life, and is unproven in animal life, as he himself insists in the *Outline*. In many recorded instances animals removed to a new habitat seem to have pleasurable enjoyment in eating plants that are poisonous and lead to sickness, or even to death. Such instances serve to show that consonance has been established only in relation to the normal environment within which the animal has been evolved. It is widely prevalent under cognitive guidance; but it is a derived and not an original alliance.

From the biological point of view, primary and instinctive behaviour leads to the outcome of life-continuance and life-expansion ; and, broadly speaking, under organic evolution those organisms whose initial responses are in adaptation to the environment survive to continue the race. But from the point of view of conscious guidance, at the cognitive level—often prolonging and endorsing initial lines of procedure—such behaviour as leads also towards pleasure and away from discomfort is repeated as often as occasion arises. But such appetitive repetition may or may not be consonant with welfare in the individual or of continuance of the species. Conscious guidance is nowise infallible ; it may often lead to elimination rather than survival. This, however, entails elimination of those organisms in which there is lack of consonance. Hence, in so far as consonance obtains, it counts for life-progress, and this every whit as much on our interpretation as on that of Mr M'Dougall.

One horn of the dilemma on which he seeks to impale us is " Divine interference with the course of evolution at some early stage of the development of the animal kingdom." It is clear that for one who contends that the whole course of evolution is, from first to last, a manifestation of Divine Purpose, the notion of " interference " at any stage is meaningless.

The other horn of the dilemma is that, if pleasure and pain count at all in evolution, they must be regarded as " efficient causes " in the sense in which the hormist uses this expression. The claim then is that only on this hypothesis can conscious guidance towards a pleasurable outcome be interpreted. The

alternatives presented to us are: Either Divine interference, or hormic interaction. I submit that there is neither the one nor the other. There is cognitive guidance under affective signature.

The objective evidence of such guidance under signature must from the nature of the case be inferential. In procedure under *non-cognitive* reference, enjoyment, pleasurable or the reverse, just comes *whether its signature be positive or negative*; but it comes in such wise as to afford data for guidance on subsequent occasions. What I seek to emphasise is that conscious guidance, at its inception, is always at the level of *cognitive* reference; and that it has its physiological basis and counterpart in the conditioned response.

Here it may be asked: How comes it, on this hypothesis, that, in the instance of cattle imported to South America, many of them continued to eat the nice but poisonous herbage? If it led to discomfort and the lessening of welfare, why not swiftly conscious guidance to the end of rejecting the harmful? Why not such a conditioned response as is said to be established when the chick pecks at medicated rice-grains? One needs further experimental evidence. But the pretty obvious suggestion is that, whereas the bitter taste of the rice-grain is practically simultaneous with seizing it, the discomfort due to eating poisonous herbs follows after a considerable interval. Even so, however, sickening due to eating on a previous occasion may coincide with eating on a subsequent occasion, though the matter is complicated through "chewing the cud." If so, opportunity for conditioning would

arise. But with far wider intervals there would be no such opportunity. Presumably the bearing of offspring in mammals brings discomfort; this normally comes in due season on several or many occasions. It is, however, improbable that, on the basis of a conditioned response, this can influence behaviour at the time of cöitus on a subsequent occasion. The events are too far removed in time.

I feel pretty sure that there are some who will say that this so-called guidance under affective signature is merely a reversion to the old and long-ago discredited "hedonistic fallacy." I take it that, broadly speaking, the hedonistic contention is that *all* the behaviour of animals and of little children (perhaps of men too) can be, and should be, interpreted as due to the guidance of action towards pleasure. Thus to characterise the interpretation I advocate would imply sheer misapprehension. In that interpretation the hedonistic principle is not in evidence *below the level of cognitive reference.*

§ 29. *Emotional Enjoyment*

In view of our own experience it is no hypothesis that our enjoyment *is* on this occasion pleasurable, on that occasion unpleasant, and perhaps on some other occasion relatively neutral. Hypothesis does enter the field when we claim that this enjoyment is concomitant with life-process, and that (why we know not—such being the nature of events) *this* life-process carries pleasure, and *that* life-process carries discomfort.

We have now to consider emotional enjoyment and will for the present leave on one side the question whether it is pleasurable or the reverse.

We have first to ask : What are the physiological concomitants of emotional enjoyment ? Our answer must be based on distinguishing analysis. From the life-story point of view we may distinguish (1) processes directly due to the reception of influence from without, (2) processes of motor response in overt behaviour, (3) processes which occur in the visceral organs, including glandular changes, modifications of heart-beat, of circulation, of respiration, of digestion, and so forth—in brief, organic changes in the body other than those which fall under (1) and (2). We cannot separate or isolate any one of these from others, for all of them go together in substantial unity ; still they may be distinguished under analysis.

Turning to the mind-story we may distinguish, in the midst of the total and integral system of enjoyment, the items of its stuff which are concomitant with those internal physiological changes which we have placed under (3). Let us regard these *and these only*, as emotional. Thus may specific episodes in the mind-story be regarded as concomitant with specific episodes in the life-story.

But in this mind-story—in which emotion as a mode of enjoyment has place—there are different methods of treatment in accordance with the purpose of the inquiry on hand. One may distinguish this emotion from that—say anger from fear, or anxiety from jealousy—and regard each emotion so distinguished as what Mr Shand calls

" the entire concrete fact." Then under each emotion will be included not only the kind of emotional *enjoyment* then and there in being, but what calls it into being and its outcome in behaviour or conduct. Thus " the entire system of anger or fear " is what Mr Shand calls " the emotion." It is " not feeling abstracted from impulse, but feeling with its impulse, and feeling which has essentially a cognitive attitude." Under this method of treatment jealousy or anxiety includes not only what it feels like to be jealous or anxious, but in what circumstances a person feels jealous or anxious as the case may be, and what he does under these circumstances.

It may be said in support of Mr Shand's method of dealing with the emotions that it is by embracing the situation as a whole and by concentrating attention on the results that accrue, and on ends to be achieved, that we link up the emotions in a consistent evolutionary scheme ; for it is their outcome that gives them biological utility or social value. Here we may heartily agree. There is no call to disparage a method of treatment which Mr Shand has prosecuted with marked ability and which has in his hands proved fruitful. But there is another method of treatment. Here the emphasis falls not on the entire concrete fact, but on a factor distinguishable therein, namely, the emotional *enjoyment* as such, and the physiological events that are concomitant therewith.

If, then, we regard emotional enjoyment as a distinguishable factor within " the entire concrete fact of an emotion," and if we seek to interpret

enjoyment of this kind in concomitance with physiological events, we have to reckon with William James's seemingly extravagant position.

Lovers of paradox are agreeably tickled by his inversion of the sequent order of events. How does it run? Stated, as he warns us, in a "crude way," it runs thus. "Common sense says, we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike. The hypothesis here to be defended is that this order of sequence is incorrect, that the one mental state is not immediately induced by the other, that the bodily manifestations must first be interposed between; and that the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble because we are sorry, angry, or fearful as the case may be" (*Principles*, ii. 449–50).

It must be admitted that this paradoxical hypothesis, in so far as it purports to afford a sufficient interpretation of current events *in adult human life*, is not likely to secure general acceptance. But even now, after controversial discussion during a quarter of a century, James's cardinal contention is, I think, too often misunderstood. As I understand it, what James had in view was a *genetic* interpretation. The question he raised was: How does emotion *first come* in the course of individual experience? And his answer was: Emotion first comes in connection with certain physiological events which intervene between external stimulation and responsive behaviour; until these intervenient

events are in being, what we feel as emotion is genetically not yet in being.

On these terms we must resolutely confine our attention to what I have called the first occasion, leaving subsequent occasions thus far out of the picture. I have elsewhere tried to do so in considering the first occasion on which a young moorhen dived when it was scared by a frolicsome puppy. There is here a two-fold result of external stimulation: (1) a distribution of efferent waves to the motor organs then first responding in this form of primary behaviour—for the moorhen had never yet dived; (2) a distribution of efferent waves to the heart, respiratory organs, alimentary system, and so forth. Concomitant with the receptor patterns due to (1) is enjoyment in behaving; concomitant with the receptor patterns due to (2) is emotional enjoyment. Both (1) and (2) are responses of the primary order. Like all primary responses they "just come" quite independently of conscious guidance or control. And until the physiological commotion in the body thus comes, its mental concomitant in emotional enjoyment is not yet in being. This, I think, is in line with James's cardinal contention though he often includes both (1) and (2) under emotion.

Now if we must interpret all first occasions—that for example of the chick when it first seizes and swallows food—in the same way as the moorhen's first dive, this cardinal contention should here also be applicable. We might then say: An animal does not eat because it feels hungry, but it feels hungry because it is eating. But there is no good

ground for assuming that the two situations—fairly typical as I think—must be interpreted in the same way. Hunger seems to be a condition *precedent* to the sight of food which stimulates eating; but feeling frightened seems to be *consequent* on the sight of the puppy, which stimulates diving.

Certain organic needs for food, for oxygen, for exercise, for getting rid of excretions—broadly speaking for the continuance of many normal functions in life-routine—are precedent to the behaviour which requires the added factor of external stimulation. There is first a physiological poise in accordance with these needs, and then perhaps an external stimulation consonant with this poise—the sight or smell of food, of a mate, and so on. But in the typical emotional situation some pattern of external stimulation efferently begets a new physiological poise. Then external stimulation consonant with this new poise is thereby emphasised. Hence the stress James lays on the *intervenience* of emotion. As he puts it, the bodily manifestations *must first be interposed* between stimulation and responsive behaviour.

Let us here revert to James's paradoxical statement, selecting for brief comment the bear-episode. Having met one, we say that we were frightened, and that on this followed trembling, catch of the breath, palpitation of the heart, and so on. What we ought to say, James tells us, is that we trembled (and the rest) and that on this followed the emotion of fear.

But is not this a commingling of the life-story with the mind-story? When James says that between perception and emotion " the bodily manifestations

must be interposed," does he not insert a physiological link in a mental chain of events? It looks like it. But he has said, a few lines before, that "our feeling of these changes *is* the emotion." There is, then, strictly speaking, no leading or following; there is concomitance. On this he lays stress when he says that a purely disembodied emotion is a nonentity.

Not a little puzzling is James's brilliant chapter on the emotions. Its main purport, as he told me, was to trace down emotion to its genetic-origin, and to show how it first comes in individual experience; and yet most of his illustrations are taken from the level that has been reached by the adult person. His aim was to show the nature of the concomitance which obtains independently of the lessons of experience; whereas the examples he gives are taken from a stage of human life at which our current cognitive reference implies the very complex outcome of much that we have learnt. He thus lays himself open to criticism. To re-quote that which has been often quoted: How comes it that, if one meet a bear in the Rockies, one may offer him a clean pair of heels or a rifle-bullet, as the case may be; but if one see him in his den at the Zoo, one may offer him a bun?

§ 30. *Foretaste in Enjoyment*

I have tried to assign to emotion a definite place in the mind-story of enjoyment. If we take seriously the distinction between two concurrent stories, let us not, save in popular and elliptical speech, inter-

polate in either story intervenient links taken from the other story. In brief, let us think in terms of concomitance.

Keeping to the life-story, it seems probable that efferent distribution of nerve-waves (1) to the organs of overt behaviour, and (2) to the visceral organs, is practically simultaneous. Contemporaneous, too, are the internal receptor patterns of this kind and that. Very close, then, is the alliance between the life-concomitants of emotional enjoyment and those of motor response. Ample are the opportunities for conditioned connections acquired in the course of individual life.

If we hyphen the events in this story and that, the question arises : What is the biological value of this close and intimate alliance of visceral-and-emotional events ? Broadly speaking the internal organic events of the visceral order accompanied by emotional enjoyment in most cases raise, in some cases depress, but probably in all cases influence the vigour of the behaviour in progress. The angry dog fights with more go and persistence. In the frightened animal the activities which lead to escape are generally more strenuous. Internal secretions liberated at times of excitement play their part. No doubt in extreme cases the emotional excitement may be so strong, and its physiological concomitants may be so overmasteringly disturbant, as to render behaviour abnormal or futile ; or may lead to collapse. Since, however, this tends, save in exceptional cases (in so-called death-feigning, for example, probably allied to collapse) to defeat biological utility, and often to entail consequences which

conduce to elimination rather than survival, it will itself be eliminated in the course of evolutionary progress. Thus the influence of emotional excitement on behaviour so as to alter its vigour will normally be kept within due bounds. On the other hand, unless enjoyment be tuned up emotionally so as, on occasion, to lead to super-normal behaviour, the animal will stand but a poor chance in competition with others.

But there seems often to be a *specific* connection between *this* kind of emotional enjoyment and *that* kind of behaviour in such wise as to further cognitive guidance. The trouble here is to define " this " and " that." Suppose, for example, it be said that there is such a connection between fear and certain primary responses leading to escape ; then, so far as observation goes, these primary responses, though we may group them under one heading, differ much. Under what we surmise to be fear, a chick, a young pheasant, a plover, a merganser, a hawk, behave quite differently. And not only is what we infer to be the same emotion in alliance with different forms of behaviour in different species, but what we judge to be the same, or closely similar, forms of behaviour are in evidence when what, in view of the whole situation, we judge to be the emotional state is quite different (cf. *Brit. Journ. of Psych.*, xi. 210–12). We talk glibly about " an instinct " and " an emotion," and then say that *this* instinct is always allied with *that* emotion. I think most field naturalists regard this inference with suspicion. What inference, then, may we draw on physiological grounds from the behaviour we observe, under surmise as to the emotional enjoyment that

we attribute to the animal but cannot observe? At present little more than this: Given certain patterns of external stimulation, and given certain patterns of internal excitation due to organic processes in progress throughout the body, a primary response in behaviour and an initial visceral response are closely allied through the two-fold distribution of efferent nerve-waves—and such responses have pleasure-pain concomitants.

There can be little question that, in the mind-story, emotional enjoyment is in some measure pleasurable or the reverse. In the foregoing section we left in abeyance the nature of the affective signature, positive or negative. This we must now emphasise; for if there be what I call foretaste in enjoyment coupled with cognitive prevision of coming events, we have an affective factor in guidance of no little importance—nay more, as I think, of the greatest importance.

Let us, however, briefly review some salient points in our interpretation. (1) A distinction is drawn between enjoyment and reference, cognitive or other. (2) *Emotional* enjoyment is concomitant with life-processes *of the visceral order*. (3) It is not co-extensive with enjoyment, for there is also receptive enjoyment in bare acquaintance with, or in perceiving, external objects; and there is executive enjoyment in behaving. (4) What I have spoken of as primary procedure carries enjoyment; but whether the outcome be pleasurable or the reverse *here makes no difference*. (5) Only in secondary procedure can foretaste in enjoyment play its part in guidance.

It is a little difficult to realise the distinction here

drawn between (4) and (5). The contention is that, in primary procedure, pleasure or discomfort just comes; and that in the absence of guidance under (5) it may come again and again and yet again *da capo*. This seems to be illustrated by the moth and the candle flame. It is just what is *not* illustrated by the chick in its behaviour to medicated rice-grains. In *that* episode of moth-life there seems to be no evidence of conscious guidance. In *this* episode of chick-life there seems to be presumptive evidence that conscious guidance plays a part that really counts in determining the course of events that we observe. The distinction of one from the other is that between the primary and the secondary order of procedure.

More generally a primary sequence of events runs its course with accompanying enjoyment *whether that enjoyment is pleasurable or the reverse*. The male spider may effect fecundation though it is again and again badly mauled in the process. In thousands of instances of primary response in animal life, behaviour, not consciously guided, seems initially to lead to situations which, so far as we can judge, are the reverse of pleasurable. But in thousands of instances of secondary procedure appetence and aversion seem to be unmistakably in evidence. It is part of the aim of the naturalist to distinguish the one set of instances from the other. What, then, differentiates the secondary from the primary? Is it not, in mental regard, some foretaste of enjoyment like that which has come in previous instances of such and such behaviour? Is there not in all conscious guidance an eye to coming events, though

it is based on experience of foregoing events on prior occasions?

I shall here be asked: What exactly do you mean by this "foretaste in enjoyment"? You must surely mean some sort of prevision in imagery, and that must imply what you speak of as cognitive reference. But you speak of foretaste *in enjoyment*. What can this mean?

In our own life vision so predominantly takes the lead that we commonly think of expectancy in terms of prevision; and this we interpret in terms of pretty definite imagery which anticipates the retinal stimulation which may follow in due course. In like manner we may have pretty definite auditory images in anticipation of what we expect to hear. But in speaking of foretaste—in lack of a better word—I do not mean a taste-image. I do not mean a sensory image of any sort. I mean that anticipatory feature in enjoyment which goes together with anticipatory imagery in cognitive reference. I do not suggest that it is unaccompanied by prevision, or by pre-audition, in imagery. What I do suggest is that foretaste in enjoyment is distinguishable from anticipatory imagery of any kind, though they may go together in inseparable union within the mind that is one and indivisible.

Of course if there be no valid distinction between enjoyment and reference, there is none between foretaste and imaginal expectation. Such a distinction, if it *be* valid, must be based on our own current experience.

I revert, then, to the concert episode. I have prevision in imagery, visual, auditory and the rest,

of what I shall experience in a few hours' time. But so far as I can discover—and must I not speak as I find ?—I have *also* foretaste in enjoyment. I feel here and now the " taste " of the enjoyment which I shall then have. And I submit that such " foretaste," as I call it, here and now present, counts for guidance as to the way in which I shall act. If it be pleasurable I shall go to the concert ; if it carry the discomfort of boredom, I shall probably do something else, unless, under reflective consideration, foretaste of some higher and richer joy comes on to the mental scene—if, for example, my doing something else, and not this, will give the sadness of disappointment to someone whom I love.

LECTURE VII

Fore-plans of Action

§ 31. *A Doctrine of Guidance*

There are certain outstanding concepts of such cardinal importance in any interpretation of life and mind that reversion to them is permissible at different stages of a prolonged discussion. Among these is the concept of guidance (*cf.* § 9). I make no apology for returning to it here, and I shall have to do so again hereafter (§ 36).

In accordance with the hormic theory (*cf.* § 15), in its animistic form, guidance is in evidence when the "anima" that possesses the body and uses its receptor and motor mechanisms manifests conative endeavour to attain the end it has in view. For *radical* behaviourism there is no such guidance as implies cognitive reference, since, as Professor Watson asserts, there are no mental processes of any kind (*cf.* § 8). Our hypothesis is that when the cognitive level of reference is reached—and *a fortiori* when the higher reflective level is reached—there is conscious guidance which counts for progress in the two-fold story of life and mind.

Leaving, then, the radical behaviourist for whom there is *no* conscious guidance, on one side, we are faced by a plain issue: Does that which in some

sense guides belong to a disparate or hormic order of being? Or is guidance evolved within one natural order of events which comprises mind no less than life under unrestricted concomitance? I unreservedly accept the latter of these two alternative hypotheses.

Thereon the further question arises: What is it that guides? May I put the question in a different form, namely: Wherein does such guidance obtain? Our contention is that *when* it obtains there is prospective reference to coming events, with prevision begotten of revival in expectancy. How such prevision in the mind-story has been evolved in concomitance with precurrent physiological processes in the life-story, I have attempted to show. But *whose* is this prospective reference? In some sense it is *mine*—or yours, or another's, as the case may be. What then am I? I am, at any given time-being, that which may be called a "self of enjoyment" in unrestricted concomitance with all current physiological events or bioses at that time-being. I am not only mind-*stuff* or body-*stuff*, though I am that also. I am essentially the *substantial unity*, one and indivisible, that is their interpenetrating tie. It is in virtue of this substantial unity that *I am*.

But this self of enjoyment that is I is affectively toned with positive or negative signature. It is I, and nothing less than I as a whole, that am in mental regard joyful or sad, with concomitant life-welfare or life-"ill-fare," in physiological regard. It should be realised, then, that when I spoke in the foregoing lecture of guidance under affective signature, with foretaste in current enjoyment, I did so in view of

this complete identification of myself with the enjoyment which is verily the central core of that which I am. From this centre reference "goes forth." It is to *me* that all guidance within the natural entity that I am must reflectively be traced; and in like manner to others, each a centre of intrinsic enjoyment and of extrinsic reference, but each in this mental regard a self-differentiated centre, subject always to unrestricted concomitance.

Such being in outline our concept of self as the system of events wherein guidance obtains, it is worthy of note that the signature of pleasure and pain which positively or negatively affects the self of enjoyment at the level of cognitive reference takes on, I believe, at the level of reflective reference, the higher emergent form of joy and sadness. There is, for example, on some hot day, pleasure in immersion of the body in cool water. There is joy in bringing off a difficult dive according to plan. It is to this higher level of reference that we have to devote our attention in this lecture. But a little more may first be said on the place of emotion in our schema.

As we have seen Mr A. F. Shand, than whom no one has done more in recent years to give new dramatic form to the literature of the emotions, calls upon us to regard them from a concrete standpoint. We have, he says, been too much concerned with emotions as elusive modes of feeling. Our hope of progress in their satisfactory treatment lies in taking a new departure. Let us ask whither they are tending. Let us define them by their conative ends and leave the feelings to their natural vague-

ness. Even so, however, we must, in view of the whole concrete fact, consider also the cognitive attitude towards some object, or objective situation, that evokes emotional procedure.

There is, then, in some sense, guidance of action towards an end that is dimly or clearly, scrappily or fully, foreseen. It may be guidance in Mr Shand's hormic sense; or it may be guidance in the very different sense in which I use the word. In either sense there is cognitive, or perhaps also reflective, reference to some objective situation. The point for emphasis is that I, on my part, distinguish this reference from the emotional enjoyment as such. Mr Shand bids us leave it to its natural vagueness.

I am not sure that I catch the full import of this expression. As this or that specific quality of enjoyment, each emotion has, I believe, its distinctly appreciable " thusness," difficult enough to describe. Specific modes, and delicate nuances of emotional enjoyment seem to me indefinable rather than vague—which very likely is just what is meant. But to say that since we cannot define a mode of emotional enjoyment we must so broaden our use of the word " emotion " as to include in its connotation something that we *can* define—to wit, the objective situation disclosed under reference, and behaviour or conduct therein—appears to me to be a retrograde step. We may, no doubt, describe in quite helpful ways the foreseen end to which the acts of a person who is angry, or anxious, or jealous, normally tend; but are we thereby helped to a better understanding of that qualification of current

enjoyment which we are prone to hypostatise as anger, anxiety, or jealousy—each with what James called a " tang " of its own ?

There is, I contend, *an evolution of enjoyment*, emotional and other, with all its varied qualities no less than an evolution of reference; and if we be content to leave these subtly-differentiated qualities to their " natural vagueness," our concept of this evolution must for ever remain in like manner vague.

It is, as I think, the self of enjoyment and nothing less—not the " organised system " of this or that " emotion," but the self as a whole in its substantial unity—that changes with this or that emotional mood, or with some more emphasised poise at any current time-being. It is I who am angry, or anxious, or jealous, and nothing less than I. And, as angry, or anxious, or jealous, I act with a difference since I *am* different.

But one who lays as much stress on this as I do may still lay stress on reference to the objective situation. When one is jealous one may—without admitting that the " feeling " is aught other than just what it actually feels like—still ask: What here and now is the cognitive reference ? In any instance of what we call jealousy, the cognitive reference is not a little complex. There is always a " three-entity situation " (cf. *E. E.*, p. 84). I pat and fondle my friend's dog. Up jumps my terrier from his place on the rug, thrusts his nose into my hand, paws me, whines, and perhaps snaps at the interloper. Does it suffice, save in popular dramatisation of the episode, to say that jealousy makes him

act thus? We must analyse the situation within which jealousy comes unbidden.

We probably start with such a situation as arises in the reflective procedure of human folk. It is a three-person situation. There is the person A, who is jealous. And why? Because B is "carrying on" with C. Rightly or wrongly A attributes to B and C reciprocal relations which are not consonant with what he thinks *ought to be* their relations to him, let us say as wife and friend respectively. It is all very complex. So much turns on what A supposes to be the *mental attitude* of the other persons in the drama.

Let us assume that the reflective situation in human affairs is susceptible of psychological analysis, literary and scientific. Is the analysis in the case of the dog of like nature? If not, in what respects does it differ? Does the animal, dog, or bird, or other, when we surmise that he is jealous, take into consideration the "mental attitude" of the other parties to the situation? Does the "ought to be" come into his purview? Anyhow, in accordance with our canon of interpretation (p. 60), the situation should be analysed at his level of mental development not ours.

§ 32. *Guidance under Plan*

In considering instinctive behaviour (§ 25) we asked whether it is probable that there are, for example in the bird's mind, fore-plans anticipatory of acts to be carried out in detail. We have now to consider a little more fully anticipatory plans with the

aim of showing that they belong distinctively to the reflective level of mental development. I shall in due course distinguish fore-plans for guidance in practical action from " schemata " for guidance in *the interpretation* of natural events. For the present I shall speak of both under the concept of plan, which is here and now to mean an anticipatory plan in mind.

When, in us human folk, the course of action which is taken conforms to a plan of action mentally envisaged in anticipation of such action, this affords presumptive evidence that *a new turning-point in evolutionary advance has been overpassed.* The stress here falls on a plan of action as present in mind—supported, let us say, by some form of imagery—prior to the actual performance in overt act. This seems to imply that which I should speak of as reflective recognition. By this I mean recognition of that which may be called " the scene of action," as affording a new instance of the kind of situation in which the action that follows will be appropriate to putting the plan into execution. For example, a golfer may have a pet plan of approach under given conditions. He plays on a strange course. He recognises the lie of the ground, and of his ball, as affording the opportunity of translating his plan into practice. Before he makes his stroke he may picture in imagery what will take place if all go well : his ball will lie within easy putting range. Quite possibly it does not actually do so after the stroke. His skill in play may not be equal to the task. But that does not matter. The plan in mind was there ; the recognition of this as an opportunity of acting

on the plan was there ; some picturing in imagery may have been there—in my case always is there. And even if he only reaches the edge of the green instead of running up within holing distance, his opponent can draw a pretty shrewd inference as to whether his stroke betokened a plan in mind—whether, as we say, he played with his head—or not. Is there in this homely example reasoning ? Is there judgment ? Is there an appreciation of value ? There is, at any rate, guidance of action in view of a plan in mind.

It will be well to select a definite avenue of approach to further consideration of a topic on which so much has been written. I select that which has been ably developed by Professor Rignano. In his interesting and valuable work on *The Psychology of Reasoning*, he leads up to the conclusion that " reasoning, as it may be observed in ourselves and in our fellow-men, is nothing else in substance than a succession or a combination of merely imagined operations or experiments which put the individual in the very same state of awareness in which he would ultimately have found himself if these operations or experiments had been performed not merely in imagination but actually—a state of awareness in accordance with which he determines his own behaviour " (pp. 97–98).

Let us start at a fairly high level of reflective procedure in human thought, and let us consider in such detail as space permits two of Professor Rignano's illustrative examples.

Take first this problem : Given three receptacles with capacities of 3, 5, and 8 units of measure, that

labelled viii being initially full, v and iii empty. How can one divide the contents into two perfectly equal parts? Here the solution of the problem by reasoning consists, we are told, in accomplishing mentally a series of operations with the liquid contents (p. 74).

It so happens that this old problem was new to me. No solution is given; so I paused to think. Pretty soon the question arose: What about reproductive imagery in the form of transference of liquid? It was no doubt present at first. But I soon realised that this is only one instance of a plan applicable not only to units of volume but also to units of weight, or of length. Imagery appropriate to these altered circumstances swiftly followed. Then concrete imagery was tacitly dropped. Interesting psychologically, it does not seem to be essential to the reasoning. What, then, *is* essential? Simple operations of subtraction and addition according to plan. How, then, can 8 be reduced to 4 with the aid of 5 and 3? Does this work: 8—3=5; 5—3=2; 2+5=7; 7—3=4? Or this also: 8—5=3; 3+3=6; 6—5=1; 1+3=4? These were alternative sub-plans. Will both work practically, or must one be selected and the other rejected? Take the latter. After a little trial and

	iii.	v.	viii.
start—	0.	0.	8.
(1)	0.	5.	3.
(2)	3.	2.	3.
(3)	0.	2.	6.
(4)	2.	0.	6.
(5)	2.	5.	1.
(6)	3.	4.	1.
( )	0.	4.	4.

error, supported by imagery now wholly symbolic, the tabular form given above was visualised and then transferred to paper. Here the slant arrows indicate transference of liquid. At stage (1) receptacle v is filled up with liquid poured from viii, leaving 3 units of measure therein ; at stage (2) receptacle iii is filled up from v so that 2 measures are left therein ; and so on. Read horizontally the figures show at each stage the distribution of the eight units of measure in the three receptacles.

That is one sub-plan. The other was tried "in mind" and visualised. But it need not be set down. Both work ; but in one case seven operations suffice ; in the other 8 are required. Is one, then, better than the other ? Other questions may arise ; Is there in each case only one order of operations ? And so on.

Although I can, as I think, always detect some imagery in my own procedure I am doubtful whether any form of imagery—natural, verbal, or symbolic—is essential to the reasoning process as such. Or let me put it thus. Even granting that some form of imagery is essential, *what* form it takes is immaterial to the process of reasoning. The salient question is this : Could I get along without plan and instances ? Imagery there was ; some reflective trial and error in the mental rehearsal of events there was ; combination of modes of procedure there was ; selection there was. But how long would it have taken me to reach a result which came in a few minutes *with* a plan of procedure had I tried to tackle the problem *without one ?* What seems to me essential is plan.

The plan itself was *general* (or universal) in the

sense that it could be illustrated by this instance or by others—for example, where the given three receptacles are ii, vi, viii, and so on. It was also *abstract* in the sense that attention was fixed on what matters to the neglect for the purpose in hand of certain features that do not matter, such as whether the units of capacity are pints or quarts. And when the plan "struck me"—seeming to come as a "happy thought" however obvious when it came—it was welcomed as having *value* for the end in view.

Another feature, closely related to this value, seems worthy of notice. Until this little problem was solved after a fashion, there was negative enjoyment in the form of discomfort in failure; while the process was in progress there was foretaste in enjoyment of some solution to be reached; when it was solved enjoyment was strongly toned with the joy of satisfaction in success. All this, which was certainly *there*, may not belong to the reasoning process as such; but one may ask whether in its absence there would be any reasoning process to discuss—whether there would be any conscious guidance of the reflective order. It seems to set towards "pleasure" in some sense of the word; but the pleasure takes the higher emergent form which I call "joy." Furthermore, having a strong manipulative bent, it gave me added satisfaction to take an 8-inch strip of paper, to snip it in lengths, and rearrange the bits according to programme. In a sense this so-called verification was needless. I felt quite sure of the result. I suppose part of the satisfaction attended the endorsement ("I thought so") of what I had

already realised—*diverse instances of one plan.* It may not be the best plan, but it was mine ; and mine was the satisfaction.

Let us now pass to the second example. I have observed, says Dr Rignano, two facts (1) that a metal rod is longer when it is heated, (2) that a long pendulum swings more slowly than a short one. Reasoning tells me immediately that if a clock with a simple pendulum be transported from a cold to a hot room it will go slower than any other clock remaining in the cold room. In what does my reasoning here consist ? " Evidently only in this : I imagine that I transfer the clock from the cold to the hot room. It is useless to perform this experiment when once I know the result. . . . I now compare the behaviour of the two clocks ; but there is no need actually to perform this second experiment. . . . Thus my reasoning has only been in substance a series of observations or experiments that I could have performed actually, because I already knew the result of each in advance " (p. 75). None the less " the conclusion constitutes a true and proper *new fact* quite distinct from the facts with which I started. It is actually a *new truth* (a *new combination*, a *new mental vision*) that is thus discovered, and that is not contained in either of the two experimental results already established taken singly " (p. 88).

Whether this truth is genuinely new in the sense of emergent and not only resultant—that is, whether there is in the conclusion more than is given in the premises—we need not here stay to consider. Be this as it may, is not each lengthening rod, each slowing pendulum-beat, each going clock, regarded,

in the procedure under review, as a concrete instance illustrative of some general plan of events? Does not "already knowing the result" mean "knowing the plan and this result as affording an instance thereof?" Can any example of reasoning be adduced which does not fall under this rubric of plan and instances, no doubt at different stages of complexity? The transition, for example, from swinging pendulum to clock is noteworthy. What the word "clock" signifies in thought is, I suppose, "an instance of the concept time-piece." One need not picture in imagery this, that, or the other such clock. The "concept," the "idea," or "notion," as such, is unpicturable: only the instances are picturable. Hence, if one does picture, there will be some instance in imagery with the passing thought that any other instance would serve equally well.

One wants to get down to what is *essential* to reasoning in its simplest expression. We are in search of some criterion which shall enable us to distinguish reflective procedure as such. Without claiming that in *plan* we find the sole criterion I submit that it is worthy of the emphasis here laid upon it.

Let us follow up just a little further the rod and the pendulum, realising that we do so at the level of intelligent human folk. Among them there will be some who want to know *why* the warmer rod is longer, and *why* the longer pendulum beats more slowly; and there will be others who want to know *what they should do* to prevent this clock going more sluggishly in the hotter room and thus increase its value as time-piece. One may be allowed to put it

thus without prejudice to those who want to know both. The former seek to *interpret* in terms of the more comprehensive plan I call a schema. And they will never do so by merely rehearsing the old rod and pendulum business in imagery. Turning, then, to the other folk, what will they *do* on the basis of what is already known ? Let us grant that they rehearse in advance of actually doing. I suppose that shifting the bob so as to make the pendulum shorter may be pictured in imagery before it is done in practice. But even here *how much* shortening will be required must be ascertained empirically by actual experiment. After gaining practical experience one may say in advance : So warm a room, so much shifting. In this modest fashion one is an expert ; and when a friend asks advice (his pendulum being of the same length) one can tell him what to do. But if it so happen that his rod is made of platinum, then instances based on steel rods do not give precisely the anticipated result. One is faced by a difficulty, and, according to Professor Dewey, thinking is the methodical overcoming of difficulties in accordance with a plan of procedure. One must locate the difficulty. How comes this discrepancy between a result anticipated and the result observed ? Is it a difference in the weights of the pendulum bobs ? Or is there a difference due to the metal of which (*a*) the bobs or (*b*) the rods are made ? Rehearsing the results of previous observations is here of no avail. One must carry out actual experiments under the guidance of some suggestion of a way out of the difficulty —some tentative hypothesis. As the outcome one

may say : I assumed that any rod affords an instance of the plan of expansion under given rise of temperature, but I now find that rods of different metal afford instances of sub-plans of such expansion. It no longer suffices to say : Any rod, this plan. We must say : Any rod of this metal, this sub-plan which still falls within the more comprehensive plan. When we know this or that sub-plan, and not till then, we can foresee in rehearsed imagery what will happen when the concrete instance is a rod of steel, or copper, aluminium or platinum.

I have selected for brief consideration two of Dr Rignano's preliminary examples of reasoning. Throughout his interesting and illuminating discussion he lays the main stress on rehearsal in imagery, on purely mental experiments often in new combinations, and on what such procedure involves—invocation of imagery, exclusion of that which is irrelevant with selection of that which is relevant to an interest which he speaks of as an " affective tendency." All this is of great value. But as will be seen from what I have already said, I should throw more explicit emphasis on plan and instances. In brief, I should say : Mental rehearsal with all that this implies—yes ; but not this only, not " nothing else than this," essentially " something more than this." Hence for the passage : " Reasoning is essentially, even in man, only a series of acts, operations, or experiments performed merely in thought," I should substitute : Reasoning is not only this, but is characterised by a new mental attitude towards plan and instances. This it is that distinguishes reflective procedure.

§ 33. *Child and Boy*

A noteworthy feature characterises procedure under plan and instances. At the cognitive level of mental development conscious guidance has, under foretaste and prevision, prospective reference to coming events. At the reflective level this prospective reference is progressively extended in range. Mental rehearsal is preparatory to acting in conduct which will be appropriate to the circumstances when they arise. But here there is also some reference to the past as affording a basis for future action. Prospective reference in all practical affairs there still is ; herein lies its value for guidance of action. But it is supplemented by *retrospective* reference to prior experience in acting under like circumstances. This retrospective reference seems to distinguish reflective procedure.

Let us note also that when the concept of plan and instances takes form there will follow in due course a change of direction in mental attitude or standpoint according as the emphasis is on *instances*-of-plan or on *plan*-of-these-instances ; and according as these rehearsed instances are referred to past experience or to that future experience of which there is prevision. On this will follow the progressive realisation that the plan abides though the instances are fleeting. When the stage of interpretation of events is reached, let us say under scientific method, we realise more and more clearly that the " truth," in one sense of this word—the " truth-claim " if it be preferred—the provisional generalisation as a schema of the natural course of

events, is applicable always and everywhere within its appropriate " universe," whereas the instances are " then " and " there." The instances are items of stuff which go together in the substantial unity of schematic plan.

It is, of course, a far cry from the earliest emergence of plan in the child-mind to reflective interpretation in terms of scientific thought. But one wants to get at those features in the latter which are germinal or embryonic in the former.

How shall one illustrate from child-life ? Is this example too trivial ? An infant cries under discomfort, and, among other things, any unsatisfied need or want may yield this discomfort. The unwise parent or nurse at once gives the child what he " cries for." The infant thus gets satisfaction through crying. Has he in his little mind *from the first* a plan of action of which on each occasion there is a new instance of the normal routine—" cry and get it ? " Are we justified in saying : The course of action is begotten of a mental fore-plan of action ? Or should we say : At some stage of his mental development a course of unplanned behaviour, often repeated, begets a plan ; and only *after that* does the " spoilt child " deal on subsequent occasions with new instances in accordance with this plan ? Note that in accepting as I do the latter view, we should not in strictness say : First instances and then a plan of which they are regarded as instances ; but first behaviour-events and then " instances of plan and plan of these instances." I think that for genetic treatment this two-fold regard just comes—is emergent.

Let us now take a long step upwards. A boy with some practice very soon acquires the art of riding a bicycle. There is tied up in his practical experience a receptor pattern, in the specialised organ of balance, due to so much inclination to left or right, and a response, namely, so much turning of the front wheel by means of the handle-bar in the same direction. This is subtly conditioned behaviour with cognitive reference, and may be nothing more. But ask the boy which way he turns the bar when a gust of wind pushes him over to the left. Very often he gives the wrong answer. He may say: "I suppose I turn it in the opposite direction—namely to the right"; and this is just *how he does not act*. What bearing has this on the question whether he has a plan in mind? Get him to mount a tricycle on one side of a good suburban road. To his surprise he cannot help running into the pavement on that side. He is probably quite unable to say why he does this. It seems and feels (*experto crede*) so silly and stupid. But think a moment. On the tricycle one is leaning a little, say to the left, since the two side-wheels run at slightly different levels owing to the arch of the road. Turning the bar to the left is then the conditioned response to this leaning, a response begotten of bicycle habit. Till the bicycle habit is broken, by a little practice on both machines, one runs the tricycle again and again into the curb—feeling more and more foolish and perplexed. One may, of course, soon learn to ride either machine; the behaviour is more subtly conditioned, but just *how* conditioned it may be hard to say. I think one who has learnt to ride

either bicycle or tricycle with ease will be content to say: There's something about the "feel" of the machine that makes the difference. Those who ride two bicycles, or drive two cars, of different build, will know what one means.

Let us now provisionally grant that our practised boy has in his mind two sub-plans—that for bicycle and that for tricycle—and that he acts on this one or on that according to the situational instance then and there presented. Still our boy may not know *why* on the bicycle he turns the handle-bar just to the due amount in the direction of his leaning. His father may help him to understand that which we speak of as "the principle of inertia" may explain the way in which it works in bicycle-riding; may show how the forward course of his body will lift him again to the vertical position when he falls slightly to the left or right; will say, You can now see *why* you turn the wheel in this direction and not that, and so on. The boy may be rather bored; may want to go out and practise some new bit of trick-riding. His chief end in view is to ride with perfected skill, not to worry over the why and wherefore of what, after all, can so easily be done.

What, then, is the bearing of this on the problem in hand? It helps us, I think, to distinguish between a mental fore-plan which shall afford guidance for skilful action and a mental schema in terms of which such action may be interpreted. I venture to submit that the latter (with *its* form of reasoning) may, on our view, fairly be regarded as at a higher emergent level than the former. And I venture to submit that, on the evidence at present to hand, it

is hazardous in view of our canon to assert that any sub-human animal is capable of such interpretative reasoning. If I may so put it, animals can ride the bicycles of their normal life quite well without it ; and probably they do not worry about the why and the wherefore as some of us do.

§ 34. *Subhuman Emergence of Plan in Mind*

Before passing on to subhuman procedure there is something to be noted which seems to me to be quite unmistakably clear in all the reflective procedure of human folk. It is always subsequent to and founded on much precedent unreflective procedure in the course of the individual life of the person.

The position under the concept of emergence is this : Just as unreflective behaviour is founded on and presupposes responses of the primary order, since it is these responses that are newly interconnected under conditioning, so is reflective procedure founded on much preliminary behaviour which affords the instances which are the stuff of some substantial plan of action to be carried out in its light, though the data were not sought with this reflective end in view.

We pass now to subhuman procedure. And here one is tempted to enliven a dull disquisition by straying into the pleasant and far more dramatic field of anecdote. The anecdote is generally a chance observation reported by an inexpert witness without special training in the weighing of evidence in its bearing on mental procedure on the part of this or

that animal ; and the observation itself is apt to be somewhat distorted (quite unintentionally) to make it fit in with what is regarded as the common-sense interpretation of that which is seen. Collection of such anecdotes was useful enough when Romanes wrote his *Animal Intelligence*, in that it opened up problems to be solved by systematic investigation based on scientific method. Long ago I tried my prentice hand at what was meant to contribute to the better understanding of mental procedure in the higher animals (cf. *Animal Behaviour*, pp. 141 ff. and elsewhere). I then regarded the evidence of what I now call reflective procedure as inconclusive. But much better and more systematic work has since been done ; and there it is on record. I now think that the evidence is of such a nature that I, for one, am fully prepared to accept it. Take this example from *The Mental Life of Monkeys and Apes* (*Behaviour Monographs*, iii. 68, 1916) as given by Dr R. M. Yerkes.

An orang-utan, Julius, had placed before him a suite of nine compartments with open or closed doors. Food could be obtained by passing through one of the open doors. The experimenter's plan in mind was, say, this : Give three (or more) consecutive open doors, such as 2, 3, 4, or 7, 8, 9 (different " settings "). Let food be obtainable only by entering the door to the extreme left, that is, 2 or 7. What evidence is there that Julius (or other animal) grasps this plan ?

For some time (290 trials on twenty-four days under varied settings) Julius stumbled upon the correct opening on a basis or apparently unplanned

trial and error (with punishment—temporary detention in the compartment—for error). His behaviour was in accordance with the rubric of secondary behaviour. Then there came a marked change. Whereas on 10th May he was seven times wrong and thrice right, "a series of correct first choices was obtained on 11th May, greatly to the surprise of the experimenter, for no indication had previously appeared of this approaching solution of the problem. It seemed possible, however, that the successes were accidental, and it was anticipated in a control series Julius would again make mistakes. But on the following day, 12th May, the presentation of the original series of ten settings, which, of course, differed radically from the settings used from 4th May to 11th May, was responded to promptly, readily, and without a single mistake. Julius had solved the problem suddenly and, in all probability, ideationally." It should be noted that the solution seemed to come suddenly and only after much foregoing behaviour of the secondary order. But there does seem here to be the emergence of a fore-plan in mind, of which the given situation then affords a recognised instance. The prompt action appears to follow in accordance with this plan. It may, no doubt, be said that the anticipatory mental plan may be only a little in advance of its ready and rapid execution in act. But what evidence could we get from the behaviour of an orang that he rehearses in imagery much in advance of action ?

Take another episode in the life of Julius. In order to reach a tempting bit of banana hanging above him he has to bring and stack boxes. It took

him six or seven weeks of rather aimless carrying this way and that to hit on an effective manner of bringing and stacking. Then one day " he suddenly seized the smaller box by two corners with his hands and by one edge with his teeth, and after a few attempts placed it on top of the larger box, climbed up and obtained the banana." On the next occasion, two days later, " he wasted no time, but piled the smaller box on top of the larger one immediately, and obtained his reward. As soon as opportunity was offered, he repeated the performance. The same thing happened on the next day and on several succeeding days. Julius had got the idea" (p. 96).

As the outcome, then, of very careful investigation, Dr Yerkes concludes " that, as contrasted with the monkeys and other mammals, the orang-utan is capable of *expressing free ideas* in considerable number and of using them in ways *highly indicative of thought-processes, possibly even of the rational order*. But contrasted with that of man, the ideational life of the orang-utan seems poverty stricken. Certainly in this respect Julius was not above the level of the normal three-year-old child " (p. 132).

I have placed in italics two points for brief comment before passing on.

(1) " Capable of expressing free ideas." I suppose the only expression of an anticipatory " idea " or plan in mind that we are likely to find in animals is such expression in behaviour as may afford presumptive evidence that the plan in mind affords a new factor in guidance—a factor previously absent. This plan is *free* in so far as it anticipates action,

but it is still *tied* in so far as it comes only in the course of a concrete and pressing situation.

(2) " Indicative of thought-process, possibly even of the rational order." What are we to understand by this? Are there thought-processes which are possibly *not* of the rational order? The answer turns on the exact signification of the words " thought " and " rational."

In his little book—little, that is, in bulk—on *How we Think*, Professor Dewey distinguishes five logically distinct steps in " a complete act of thought." They are, he says, " (i) a felt difficulty; (ii) its location and definition; (iii) suggestion of a possible solution; (iv) development by reasoning of the bearings of the suggestion; (v) further observation and experiment leading to its acceptance or rejection; that is, the conclusion of belief or disbelief." Let us concentrate attention on the fourth step, in the absence of which there would not be a complete act of thought. This he speaks of as " the rational elaboration of the idea "; and the signification he attaches to the phrase is clearly stated. " The process of developing the bearings—or, as they are technically termed, the *implications*—of any idea with respect to any problem, is termed *reasoning*." It may be said that reasoning in this restricted sense is a sub-species of reasoning in the sense in which Dr Rignano uses the word. The question, then, is this: Is there presumptive evidence that in the ape (or in the child of two or three years) there is thought-process in this restricted sense? When a difficulty is realised as such; when its location is regarded as a step towards solution; when, an idea or plan

having "crystallised out," it is elaborated in view of its bearings or implications; when there follows "some kind of experimental corroboration, or verification, of the conjectural idea"; when the outcome of this is a final "yes-no" attitude of belief or disbelief; when this carries with it satisfaction, or the reverse, of a distinctive quality; when this kind of reflective procedure characterises the life of a rational being; have we here the emergence of something genuinely new in mental development? I believe we have.

But whether Julius at five, or Tommy Smith at two and a half, has reached the level of a rational being *in this restricted sense*, is, to say the least of it, open to question. They may have fore-plans of practically guiding value in pressing situations, but not yet those interpretative plans which I call "schemata." I suggest that we should subdivide reflective reference, and should reckon with (1) *sub-rational* fore-plans at an earlier stage of advance, and (2) *rational* schemata at a later stage—perhaps only in man.

We are here concerned with the earlier sub-rational stage of fore-plans. Of their presence in the ape-mind I have shown the kind of evidence which Dr Yerkes has adduced, confirmatory of, and extending, that for which the previous work of Drs Thorndike, Kinnaman, Haggerty, Hamilton, and others in America, and Professor L. T. Hobhouse in England, had paved the way. Other evidence has more recently been adduced by Professor Köhler. Somewhat different in method, it points, in my judgment, to a like conclusion. I think we may now

say that the apes, and in less degree some at least of the monkeys, show reflective guidance under fore-plan of many modes of action in circumstances of difficulty. They have reached the sub-rational level.

If we feel justified in inferring, not only from experimental investigation under specially controlled conditions but from their general manner of behaving, that apes and perhaps some at least of the monkeys have overpassed the threshold of sub-rational procedure, the question arises: How far down in the mammalian scale can we find evidence of the guidance of behaviour in the light of a sub-rational plan in mind projicient on to the course of events through the recognition of instances as opportunities for translating anticipatory imagery into practical action nicely adapted to the circumstances of the concrete situation? That, I think, remains to be shown by following up the clues already afforded, even if this entail on the experimental side repetition and revision of much previous work in view of some such criterion as is here suggested. It must, however, be admitted that the application of this criterion, which is based on human experience, to the behaviour of animals is not at all easy. In other words, evidence of a fore-plan in mind which anticipates in imagery actual procedure in overt behaviour must be a matter of inference to be drawn with that caution which every interpreter of the mental concomitants of complex behaviour must cherish if his conclusions are to bear the brunt of searching criticism.

Many years ago (cf. *Animal Behaviour*, p. 271) I briefly considered the evidence afforded in sheep-dog

competitions. I then expressed the opinion that in the whole procedure the dog that has learnt to respond without fail to a code of signals is merely the well-trained executant of his master's plan of action. If this be so, interpretation on a basis of secondary procedure suffices. Each several act of the dog may be regarded as a conditioned response. I have from time to time had opportunity of talking the matter over with experts. "Do you think," I asked one who had gained many prizes, "Do you think that the dog has a method and plan of his own?" "Not the *winning* dog," was the reply. "The cleverest dog I ever had would, on occasion, go about it *his* way and not mine. None could beat him with sheep in the open; but in a competition a dog must go *my* way and not his." Few who are intimately acquainted with the facts would claim that, even in the open, the dog has a plan of the whole business like that of the shepherd who has trained him in the business. But it may well be that he has in mind sub-plans and recognises certain recurrent situations as concrete instances giving opportunity for putting this or that sub-rational fore-plan into action.

I am disposed to believe that evidence of sub-rational procedure will be traced some way down in a graded mammalian series. But I cannot here discuss the evidence. My present aim is rather to seek a criterion of reflective procedure under fore-plan at the sub-rational level than to consider how far it is applicable in this case or that, for example in elephant, horse, ox, sheep or deer, rat or mouse, and so forth.

§ 35. *Cortical Concomitants*

The emergent levels of mental development are those which I have called primary (non-cognitive), secondary (cognitive), and reflective. Primary behaviour is that which seems on the evidence to be wholly unlearnt in the course of individual life, and which just comes as the concomitant of life-process when the adequate external stimulation and the appropriate internal excitation afford the requisite receptor patterns. Secondary or cognitive procedure is the concomitant of conditioned responses established in the course of individual life, and is characterised by conscious guidance with prevision, and foretaste in enjoyment. All secondary behaviour is founded on primary responses that afford the initially permeable neurone routes which are inter-connected under conditioning. Perhaps fully nine-tenths, if not a far larger proportion, of animal behaviour, even in mammals, can be interpreted —subject to concomitance—as an intimate blend of secondary and primary responses, the several factors of which may be distinguished under careful analysis. But there is also in some mammals, possibly in birds too, a type of procedure where reflective guidance is also in evidence—that is, procedure on a new mode of control in accordance with a fore-plan in mind, with the raising of the lower emotions to the level of the higher sentiments in their early forms of evolutionary progress. Such plans, and such incipient modes of affective development in the self of enjoyment, are always in close touch with practical action. For in animals there

is little evidence of that higher form of schematic procedure which perhaps is restricted to human folk as interpreters of external nature and of plans of action in relation thereto. If this interpretative procedure be regarded as a higher step in emergent evolution it comes only (for example in the child) when the lower and practical type of reflective procedure has afforded a large body of the requisite data, as this comes only (say in the ape and in the younger child) when secondary procedure is well-established on the yet lower foundations of primary response.

Now if it be granted that there is psychological evidence of the emergence of plans in mind having anticipatory value for reflective guidance of the action which follows in due course, what physiological integration of neural events is concomitant with this mental synthesis? Is there a specialised part of the cerebral cortex within which the higher modes of integration obtain? None but an expert in a very difficult field of inquiry is competent to give an opinion that carries weight. But Professor Bianchi in his work on *The Mechanism of the Brain* presents a strong case for the cortex of the frontal lobes of the brain as affording the requisite physiological provision for those neuro-bioses with which mental events of this higher order are concomitant. In dogs and monkeys subjected to surgical operation under which the frontal cortex has been destroyed, much of the procedure of the secondary order remains unaffected; but they are abnormally stupid; they lack initiative; they seem no longer capable of recognising a once familiar situation as an instance

affording an opportunity of translating normal monkey-plans into prompt and ready action. The cruder emotional life of the primary and secondary order is strongly in evidence; but it is no longer subject to the more refined and circumspect control which characterises incipiently reflective or sub-rational guidance. The poor things seem to have lost that higher "sociality" which betokens emotion in alliance with reflective procedure. As I read the evidence which Professor Bianchi adduces, the difference in behaviour between the intact and the frontally maimed animal is that between procedure guided by plan, and behaviour in which this higher form of guidance in act is absent. Secondary guidance there still is; but under frontal mutilation reflective sub-rational guidance seems to be no longer in evidence.

Dr Bianchi claims that clinical evidence in the human subject is fully consonant with the hypothesis he advocates. It has been urged, however, that the visual, auditory, and motor speech-centres are localised in the post-frontal regions of the cortex. All the evidence goes to show that language depends on the higher mental processes concomitant with the functional activity of the frontal lobes. But all the evidence goes also to show that speech-centres are localised in certain parts of the post-frontal regions. Is it a valid criticism to urge that the evidence is, therefore, contradictory? Surely not. There is nothing contradictory in saying (1) that speech-plan *depends on* the higher mental process correlated with frontal activity, and (2) that the use of language *involves* the appropriate functioning of

post-frontal centres (*E. E.*, § III). Nay rather it is in strict accord with our general principles (1) that what takes place at a higher level in which new relations obtain *involves* lower level events ; and (2) that the particular way in which these events run their course *depends on* the new relations which obtain at the higher level (*cf.* Foreword to the English translation of Dr Bianchi's work).

There seems, then, to be a good deal that lends support to the hypothesis that in mammals the evolution of procedure in accordance with plans in mind is concomitant with the evolution of the frontal region of the brain, difficult as it may be to delimit this region in the lower types of the mammalian cerebrum.

LECTURE VIII

Thought and Action

§ 36. *The Story of Influence and of Reference*

That thought is a guide to action few may feel disposed to deny; but that all human action is guided by thought few will venture to assert. It seems, then, that human action may or may not be subject to the guidance of thought. But again we must revert to the question: What are we to understand by guidance?

Let us first ask: What are we to understand by action? It will be convenient to concentrate attention on bodily action in the organism, and try to link it up with a concept of action applicable to all natural events. In the broad and general sense one may say that any given instance of action implies an occurrence or event, simple or complex, in the physical world of interrelated modes of influence. It is a phase in the onward passage of physical influence received on the one hand, and on the other passed on. In this sense all human action is bodily action. It is, for genetic treatment, traceable on the one hand to influence which impinges on some differentiated part of the body; it is, on the other hand, the output of influence from some differentiated part of the body. Between income and

output there is often a bewilderingly intricate chain of intervenient events. Hence output at one end of the chain may be very different in amount from income at the other end of the chain. But, however complex and however prolonged the chain may be, every intervenient event is interpretable in like terms of income and output of influence.

In fullest extension, then, the total constellation of physical events is a very complex system of action under influence. Any given event has, so to speak, to thread its way through a maze of influence, and its onward course is deflected in accordance with the nature of the field of influence through which it passes. It is for the man of science to ascertain the nature of this or that field, and the formula to be used in assigning to the event its course therein. But, given the nature of the field, the change in the onward course of any event therein is determinate —that is, in accordance with natural plan represented in thought by a reflective schema of interpretation. May we then provisionally speak of its course as *directed* within the field of influence? If so, may we express this by saying that it is directed under influence? Such use of the expression " directed under influence " does not imply that it is guided under conscious reference, though it may be so guided.

Now within the whole physical system any integral entity, such as the human body, is a subsystem of physical events—where physical is to be taken as including physiological at the higher level of emergence distinctive of a living organism. May we say, then, that any given event in the human body

threads its way in a field of the emergent complexity peculiar to its specialised sub-system; and that its onward course is deflected this way or that in accordance with the nature of this highly differentiated field, or in accordance with the constellation of other events therein? If so, it is, in the sense above indicated, directed in its course under influence.

There is, however, a hierarchy of modes of action in the human body, though all events therein run their course in the substantial unity that characterises an integral system; and the highest kind of action is that which obtains in the frontal cortex of the brain. Furthermore the brain is recipient of influence from many events throughout the body and distributive of influence throughout the body. For all these events it is the chief intervenient centre. It seems, then, to be specially differentiated so as to afford direction under influence.

All this is one story, that of action under influence with direction in the sense that has been indicated. To tell this story is the task of the physicist and the physiologist. That it cannot as yet be fully told is obvious enough. But that the thought-plan for interpretation—the schema of its plot—affords a trustworthy basis of procedure for the advancement of scientific knowledge is not only the policy, but the creed of the majority of physicists and of many physiologists.

There is, however, in accordance with the radical duality of nature another story—that of enjoyment and of reference. This is the story of mind. On the method of interpretation here advocated

every mode of action within the human body has its answering concomitant within the human mind. Correlative to the physical and physiological story of action under specialised modes of influence is a mental story to be told in terms of reference. But there is *ex hypothesi* a hierarchy of mental events no less than a hierarchy of physiological events. And the highest kind of reference is that which obtains in human thought as concomitant with modes of action in the frontal cortex of the brain.

The trouble is that the whole physical system of action, under interplay of influence, is known to us only in terms of reference under schema ; and yet this world, known to us only through reference, is that in relation to which there is conscious guidance of human action. What, then, is the relation of direction under influence to conscious guidance ? We have here the focal centre of an age-long problem. Direction of action under influence is distinctively a concept applicable to physical events ; conscious guidance under reference is no less distinctively a concept applicable to mental events. How then are these two concepts related in the more comprehensive schema that includes both ? The one is interpretative of action ; the other is interpretative of mental processes that lead up to thought.

It may be said that action is, at some stage of a continuous process, transformed into thought and that at some later stage thought is translated into action. There is on the receptive side action of matter on mind ; and there is on the executive side action of mind upon matter. Between reception and execution there is a series of intervening

events. But whereas many of the intervening events are physical, some of them are nowise physical but are mental only. Such is the interpretative schema of " impartial dualism " (*cf.* W. E. Johnson, *Logic*, Part III, xix, xxxi, 114–17).

This schema of impartial *dualism* is alternative to that of impartial *duality* under concomitance. According to the doctrine of duality here accepted all action and every mode of influence is physical. There are not some intervenient events that are physical and others that are not physical, but mental only. *All* the intervenient events are physical and interpretable by the physiologist in terms of action; *all* the intervenient events, under duality of nature, are mental also; but some of the intervenient events carry cognitive or reflective reference, prospective or retrospective. In other words, all events are subject, under this schema, to direction by influence; some of the events are subject also to conscious guidance concomitant with directive influence within the brain.

We have then two different schemata for the comprehensive interpretation of natural events which include in the one regard human action, and in the other regard human thought. Should not the supporters of both be deemed worthy of full respect as honest seekers after truth? Leaving others to develop their schema, my task—by no means an easy one—is to render that which I have been led to accept in some measure comprehensible.

In our present context emphasis falls (1) on unrestricted concomitance, (2) on the radical distinction of the story of influence from that of reference,

(3) on the evolution of reference through ascending emergent stages.

Quite apart from acceptance or rejection, my thesis will not be understood if the full implications of unrestricted concomitance be not grasped. What does it mean ? It means that every mode of action in the human body—every biosis as I have ventured to call it—has its accompanying mental concomitant, its answering mind-event. On this view mind, in the comprehensive sense, is not restricted to concomitance with the very specialised kind of neurobioses which obtain in the brain, or even in the lower parts of the central nervous system. At the nerve-ends there are tactual concomitants, visual concomitants, and those mental concomitants that accompany muscular, glandular, and visceral action. There is no organ, no tissue in the body, no cellular constituent, no chromosome or chondriosome factor, the action of which is without its mental accompaniment. The totality of concurrent bioses in substantial unity of action is the life of the body ; the totality of concomitant mind-events in substantial unity is the self of enjoyment. The items of stuff are subject to the duality of nature ; the substantial unity is common to both " aspects."

But apart from the contribution to enjoyment that each provides, every mental event carries also reference, which affords its contribution to the total system of reference which is distinctive of mind. That part of this system of reference which is objective to the adult mind—objective, but through and through mental—has been gradually evolved so as to accord with the complex system of influence

on and within the body. Such accordance as obtains is the outcome of evolution in this or that living being up-to-date. The accordance, at best, is far from complete ; but less incomplete accordance has been progressively attained in the onward and upward advance of mind.

Just as in the physical story of influence our task is to trace in the individual as a product of evolution the development of the adult body from the fertilised ovum, so in the story of reference our task is to trace the adult mind from the concomitants of action before and after gametic union in fertilisation. If we take evolution—that is, the progressive advance of natural events—*seriously* (as Professor Alexander might say), we must not " posit " the human mind at the advanced stage of development with which the logician, quite properly for his purpose, starts as somehow already in existence. We must follow step by step, at least in schematic outline, its evolution in concomitance with physiological events in the body *ab ovo*. Nothing short of this should satisfy the evolutionist *pur sang*. Nothing short of this is an evolutionary interpretation of mind, as the word " evolutionary " is here used.

§ 37. *Inclusion or Possession ?*

It may perhaps be said that scarcely even the salient steps in the story of reference can as yet be distinguished. That may be so. One can but try to develop a schema on the basis of inference from the best available evidence. My own tentative schema has been given. Starting at what I called

the non-cognitive level (*a*) of the multifarious events which go together in substantial unity to constitute the ground-plan of our bodily life, I urged, in effect, that correlative with the system of action under influence—which it is the business of the physiologist to deal with—there is a system of reference that has not yet reached the prospective level of mind. This is admittedly based on speculative considerations concerning which something more will be said later on. At the cognitive level (*b*) reference, hitherto not prospective, becomes prospective. In the physiological story of action the turning-point from (*a*) to (*b*) is the conditioned response. In the mental story of reference there follow in due course the transition to anticipatory plans in mind at the sub-rational level (*c*), and the further transition to those interpretative plans which I asked leave to earmark as schemata at the rational level (*d*). Concomitant with these later stages of planful reference are answering stages of planful action under influence in the cortex of the brain. Further recapitulation is unnecessary. Suffice it to emphasise again that the story of reference as part of the mental story, and the story of action under influence, the bodily story, are different stories though both deal with the same sequence of events under duality of nature.

It seems, then, that in the course of a man's daily life there is a subtly varying sequence of events going on *at all levels* of reference with concomitant levels of influence. Myriads of events are in passage at the *a*-level; thousands of events at the *b*-level. Some events are such as to characterise the *c*-level of fore-plans in mind; we are just now at the

d-level, seeking to develop a schema which shall help us to interpret, rationally as we hope, events at all levels of influence and of reference. Let us ask sundry questions to the end of rendering the position clear.

First, what are the events? They are all the natural events which go together in substantial unity to constitute the man, body and mind. May we then say that, in mental regard, these are the events with which he is acquainted or of which he is aware? If so we distinguish *him* from *them*. What is he who is acquainted with them? What are they of which he is aware? My reply may seem paradoxical. None the less my reply is that he is they and they are he. This appears to annul the distinction—for distinction there undoubtedly is. What meaning, then, can be attached to my statement? I must revert to the cardinal concept of substance and stuff. In terms of this concept the meaning I attach to the seemingly paradoxical statement is this: *They*—the several events in all their multiplicity and diversity—are the items of stuff that go together in substantial unity; *he* is the substantial unity in virtue of which all these items go together in such wise as to constitute the him as an integral entity. Apart from them he is not; there are no items of stuff that go together in substantial unity. Apart from him they are not; are not, that is, as items of *his* stuff.

But what does *his* here mean? Our reply must be: If he, as man, is the integral system that comprises all the items of stuff that go together in substantial unity, clearly *his* must mean for us, all that is

" of or belonging to " the system that he *is*. In other words, any thought of the mind, or action of the body, is " his " *by inclusion* and not " his " by possession, save in the colloquial sense in which we may perhaps say that the atom possesses its electrons, or that a molecule possesses the constituent atoms which are the very stuff of its being. In this context we get rid of the concept of ownership which puzzled William James not a little in his discussion of the self. We should not say that, when a system of physiological events reaches a given stage of complexity, say in the cortex of the brain, it thereupon becomes owner of consciousness. Nor should we say that at any stage of organic development mind becomes owner of, or enters into possession of, the organism, or, perhaps, takes possession at the outset of life. That implies a hormic, or animistic, schema different from ours. Even the word " has " gives pause to thought. When we say that an entity, at such and such a stage of emergent evolution, *has* new qualities, the " has " is constitutive not possessive. In like manner when we speak of a rose as *having* such and such a shape, or colour, or scent, we mean, I take it, that the object of percipient reference *is* thus shaped, or coloured, or scented. And when we say that a work of art or a natural scene, *has* beauty—more generally that any object of reflective contemplation has value—we may mean that it *is* beautiful or valuable.

Here some difficulty may arise in connection with Professor Alexander's expression " possessed by mind." He says that beauty is possessed by mind

in a sense that colour is not. Fully admitting that there is an important distinction between so-called secondary and tertiary qualities, in my view it is that which different levels entail. Beauty is constitutive of the object at the higher reflective level; colour of the object at a lower cognitive level (*b*). Each, as objective, is what it is in a field of projicient reference. But the field of reference is different in accordance with the difference of level in mental development. Apart from that field—that is, as a bare physical thing in the system of influence—the rose or the work of art, no longer "possessed by mind" within that field of reference, may be neither beautiful nor coloured.

Where, as in this matter, there is divergence of opinion, I seek only to make my own position clear. What I regard as central is that we should neither speak of ownership of mind by the cortex of the brain, nor speak of ownership of brain or body by the mind. Under duality of nature neither possesses nor owns the other. It follows that we should not speak of any organ *of the body*, hand or eye for example, as an instrument *of the mind*.

It is difficult to express in language sanctioned by convention the point of view from which it may be urged that there lurks behind these conventional modes of speech an assumption the validity of which can no longer, on our part, be accepted under acknowledgment. That assumption is that the mind uses the body or some part of the body as its instrument.

It may be said: Surely it is obvious that a man may use hand and eye to effect the end that he has

in mind. Yes, one does not deny this as a familiar mode of statement well meaning enough. But one may regard the statement as an elliptical mixture of the two stories we seek to distinguish. Since, however, the statement as it stands amply suffices for common-sense purposes, it may, no doubt, seem mere pedantry to disentangle the interwoven threads. None the less let us try to do so.

Hand and eye are bodily organs. Through the one the body is in receipt of influence from some pattern of external events; through the other the body exercises influence in such wise as to alter this pattern. But many other events intervene; the brain is the focal centre of their take and give. If, then, we try to keep to one story, that of action under influence, and if we find it convenient to use the word "instrument," we ought in strictness to say that hand and eye, or other such organs, are instruments of the brain, not instruments of the mind. They are instrumental *in the story of action*.

But under unrestricted concomitance there is no action in the body that has not its mental counterpart.

Now we say, intelligibly enough under the elliptical conventions of current language, that the eyes, acting together in very complex adjustment, have been evolved in subservience to binocular vision. That, again, is good enough for common-sense discourse. Vision, however, belongs to the story of reference; and *the mental concomitants* in all binocular adjustment in the story of action, as told by the physiologist, are subservient (one must use some such

word) to vision *in the story of reference*. So, too, all manipulation in the story of action is carried out with reference to the objective situation. Events in the one story are step by step in the course of infant development rendered more and more nicely accordant with events in the other story. Hence, as we commonly say, the child develops alike in body and mind. *But is there not a radical distinction between mind and body? This distinction we seek to preserve and emphasise.* Cumbrous as the modes of verbal expression must be, we may put the matter thus: In the story of action this or that organ of the body is in a broad sense instrumental within a system of action under influence; in the story of reference the mental concomitants of action in this or that organ of the body are subservient within a system of reference. In vision, for example, the eyes in binocular adjustment are not instruments of the mind; but the mental concomitants of their bodily action are subservient to the development of a field of objective reference. If certain modes of action in Dalton's retina, or choroid, or elsewhere, were abnormal and rendered his body defective, the concomitants of such action were likewise abnormal, and rendered his field of percipient reference that of a colour-blind person. And if I suffer the defect of "beauty-blindness," there is correlative defect somewhere in my brain. Æsthetic appreciation no less than colour-perception is concomitant with the action of its instrument in the system of bodily action. The instrument need not be the eye only; but it is instrumental to action whatever its organ may be.

§ 38. *The Evolution of Reference*

Under duality of nature then, two stories may be told—that of action, no matter how complex under physical influence, and that of reference which, in evolutionary process, leads up to all that is objective in a field of thought.

For that thought, in our scheme of interpretation, any given man is the focal centre of the events of which the two stories may be told. His body, as a system of physical and physiological events, is a focal centre of the give and take of influence. His mind, as a system of enjoyment accompanying all action within the body, is a focal centre from which reference goes forth. Under the *take* of influence in receptor patterns his body is attuned to events in the external world, the existence of which we acknowledge in our schema as a basis for physical interpretation. Under the *give* of reference this external world takes objective form for this or that human being. *His* is the system of physiological and physical events; *his* is the enjoyment which accompanies all action within this system; *his* is the system of reference, assuredly not less complex than the physical system that is his. And what, for us, is he? *He* is the substantial unity of all these items of stuff that are *his by inclusion*; *he* is not other than the system of events of which the two stories may be told; *he* is that relational tie in the absence of which there would be no such system of events.

It must be remembered that when I speak of influence I always mean physical influence. For the

purpose in hand it is that influence the receipt of which affords stimulation from without, or excitation from within the body, whether from a distance however " conveyed," or at the minimum distance, we speak of as " contact." We here accept within our schematic interpretation such influence as given throughout nature; given, too, are the space-time relations which may be interpreted under schema in terms of a four-dimensional frame. For us all action is within a field of influence, as these words are here and now used. For us, as Professor Dendy put it physiologically, " the entire life of an organism consists of a series of responses to stimuli which reach it from various sources." But how bewilderingly complex, as the outcome of progressive advance, is responsive action in the frontal cortex of the brain! It is a terminal product of the emergent evolution of action. We must tell this story as best we can. As yet little more than a preliminary outline can be sketched out.

The story which tells of reference is another story. Is its terminal product less complex? Whether it be more or less complex (for us the complexity is coordinate in level) is it a terminal product of evolution? That is our contention. Does it, then, somehow and at some stage of evolutionary advance, arise by transformation of influence into reference? For us, in accordance with our schema, it does not. Whence, then, does it arise? My reply is that it should be accepted under acknowledgment as correlative with influence in the very foundations of nature. Duality of nature does not *arise* in the course of evolutionary advance; it is there *ab initio*.

A speculative hypothesis no doubt. But is it more speculative than the hypothesis of dualism? Let us not wrangle over this. Let us ask: What, under *this* hypothesis, are we invited provisionally to accept?

Stated in abstract form our hypothesis is that in respect to any two entities duality of aspect, regard, or "attribute," obtains. As Spinoza put it, each is "animated" in accordance with its status. Let the two entities be in physical regard *e* and *m*. If they be "within range" of influence, one on the other, they are doubly related; (1) through physical influence, and (2) under mental reference. Let us label the mental by Greek letters. Then each has its physical or material aspect *e* or *m*, and its psychical or mental aspect ϵ or μ. Each is $(e\epsilon)$ or $(m\mu)$. In respect of its physical "attribute" each influences and is influenced by the other. In respect of its mental attribute each, so far as influenced, "takes note of" or "perceives" the other—in the Leibnitzian sense of the word "perceives." Each behaves not only subject to the influence of, but with "percipient" reference to, the other.

Such percipience is of the non-cognitive order. But, for us, non-cognitive reference makes no difference in the course of natural events. There is, for us, no guidance till cognitive reference introduces the prospective factor. Hence where *e* and *m* are inorganic entities, the physicist by common consent is allowed to pursue the even tenor of his way. It is, however, open to the monadist to say to him: What you call *e* and *m*, and speak of as physical, have no status in reality; they are only *percipient*

appearance ; as such they are *really* ϵ or μ as the case may be ; and all the observed facts can be, and should be, explained on the principles of monadism.

Now the monadist—and, indeed, the thoroughgoing idealist of any school—urges that there is really only one story, that of mind. And, for him, it matters not whether we are dealing with inorganic or organic entities, since in either case we are concerned only with objective phenomena as they appear to mind. But there are those who distinguish two orders of being *with like claim to reality*—the inorganic and lifeless on the one hand, life and mind on the other hand. We must turn, then, to current biological treatment.

If *m* be a plant, say a germinating bean, and *e* the massive earth, what we observe in *m* is geotropism, positive in root and negative in shoot. Most biologists will say that there is here action under influence to be interpreted in terms of stimulus and response. There is direction of growth in accordance with (*a*) the intrinsic nature of the organism, and (*b*) the incidence of influence in a gravitative field. They may also say : There is here no evidence of any mind-story ; a life-story is adequate and sufficient. We should say : There is here *ex hypothesi* non-cognitive reference ; but there is no evidence of cognitive process with prospective reference, and therefore no conscious guidance. Others, however, psycho-biologists and animists for example, will say that even here there is conscious guidance. The direction of incidence is perceived by the plant ; and action in shoot or root is guided with some conscious reference to the further outcome of growth in the

one or the other. They accept the monadistic hypothesis where life and mind are in evidence, but not with respect to the physical mechanism which is possessed, and is used as instrumental to some purpose, by the indwelling anima.

There are thus divergences of interpretation. But I am concerned only to render clear, if I can, my own hypothesis. With regard to the plant there is, on this hypothesis, non-cognitive reference; there is no such cognitive reference as counts for conscious guidance.

But at some stage of evolutionary advance cognitive reference does enter on to the scene in the story of mind, probably only in animals. Take, then, some lowly animal. If *m* be a starfish, placed on its back, the "righting" behaviour is a life-story to be told in terms of stimulus and response. But here there seems to be more call to tell also a mind-story of cognitive reference which, as prospective, subserves some small measure of conscious guidance of the course of events which we observe. No doubt here much will depend on differing estimation of the evidence presented under careful observation. We may, perhaps, regard the starfish as affording a borderland instance, concerning which some may say that a life-interpretation only is adequate, while others may say that, in their opinion, the cognitive level of mind has here been reached.

Take, then, one more step—rather a long one—upwards in the scale of animal life. If *m* be my dog and *e* the fire in my room, when he shifts his position towards or away from it, few would hesitate before saying that his behaviour is guided in a field

of cognitive reference which has been so evolved as to accord with a field of physical influence. And so we may work up step by step to more and more subtle and delicate accord of physical influence which stimulates action in the body, and of cognitive reference from the mind as concomitant with and accompanying such bodily action, including action in the brain.

Revert now to our levels, concentrating attention on those which I labelled (*a*) and (*b*). One must remember that in us events at both levels co-exist. It is the task of analysis to distinguish them *as factors*. Let us then try to distinguish some factor in our own life which may be assigned to the *a*-level.

Take retinal response to stimulation—but take it *as such*, that is, without tracing the course of events *beyond the retina itself*. Then there is an external pattern of events. This begets, under stimulation by modes of influence to which the retina is attuned, a receptor pattern of action in the retina. Accompanying this retinal action is a pattern of enjoyment, and a pattern of objective reference as yet non-cognitive which subconsciously symbolises the external events that afford the pattern of stimulation. At the *a*-level this pattern of objective reference is in close non-cognitive accord with the pattern of external events which it symbolises. There is here the basal foundation on which cognitive reference supervenes.

For when we trace the course of responsive action *beyond the retina* into the arcana of the brain, there is, as we have seen, provision therein for conditioned behaviour. We thus rise to the *b*-level in our

hierarchy. What is its salient characteristic? That the routine of action in the brain, *concurrent* with other events in the body, is *precurrent* to the later phases of routine in the pattern of external events. Symbolic reference, concomitant with this precurrent brain-action, is therefore prospective. It anticipates in symbolic imagery further phases of external routine which are not yet in being—which are coming as instances of the natural plan of events, but on this occasion, in this given instance of plan, have not yet come. There is in the one story what the physiologist speaks of as control of action in the body outside the brain by precurrent action within the brain. And accompanying this precurrent action within the brain, there is prospective reference in the symbolism of imagery. But other factors than those that are retinal contribute to the evolution of such imagery.

If, for example, instead of restricting attention to retinal action under light stimulation we include binocular adjustment, we raise a pertinent question with regard to the evolution of reference. Concomitant with adjustment, in us normally binocular, there has been developed reference to position in an objective field—later interpreted in a space-schema. Here unquestionably there are in the one story not only retinal factors but factors of motor adjustment and accommodation. And in the other story there is a spatial determination of reference in vision. The question here pertinent is whether this spatial determination is interpretable at level *a*, or must be supplemented by the mental concomitants of conditioned behaviour at level *b*. I am of opinion

that, in respect of binocular vision, all the evidence is in favour of the answer that spatial determination under reference cannot be interpreted at level *a* only —that it accompanies conditioned behaviour. In psychological terms it is learnt in the course of individual life—in the infant, for example. It is an upward step in the evolution of reference. It must be interpreted at the *b*-level.

On this *b*-level there follows the *c*-level with its sub-rational fore-plans in mind. There is further elaboration of symbolic imagery in generic form having objective reference to situations, and hence to patterns and routines of events in the external world to which action in behaviour must conform. Eventually in us the rational *d*-level is superposed, and we reach the added complexity of reference under schema. But here too all that takes form under thought is concomitant with modes of intervenient action in the frontal cortex of the brain.

§ 39. *Reference under Schema*

When we reach the stage of thought where interpretation of events is the goal of purposeful endeavour, we have the greatly increased complexity of reference under schema. So dominant is this new kind of reference in the mental procedure of thoughtful persons—and especially of those whose aim is to interpret the processes of thought itself in alliance with action—that any attempt to indicate its status in an evolutionary scale of reference is often said to be foredoomed to failure.

I take it that when this or that line of inquiry is

said to be foredoomed to failure it is implied that it proceeds on false lines which cannot possibly lead to success. What then is here regarded as a false line? Is it not that it presupposes that human thought can be interpreted as the outcome of a natural process of evolution, emergent or other? Of course if this be so, if human thought, in that it belongs to a hormic order of events, be outside the pale of that evolution which is for us the advance of one order of events under duality of nature, *cadit quæstio*. In like manner any attempt to indicate the status of cognitive reference in an evolutionary advance of reference is often said to be foredoomed to failure. We must, it is asserted, take cognitive process for granted. We are bidden to accept percipient apprehension as we find it. There it is. Let us accept it at its face value *as it is disclosed in our adult life*. This, it is said by many new realists, is plainly the verdict of common sense.

Now common sense knows its own business with remarkable perspicacity, and is amply justified in starting business with such assumptions as conspicuous success in that business has endorsed. Perhaps not often does it pause to ask whether common sense itself is the outcome of evolution or not. We invite common sense to pause. We beg it to consider whether the assumption, that common sense itself can be taken for granted as something beneficently given, may not need radical revision if the concept of evolution be taken seriously.

In any case, for those who do take evolution quite seriously and regard it as applicable alike to body and mind, the story of the evolutionary stages of

advance in the development of reference must either be told as best we can, or await the telling. Just as in physiological regard we provisionally start with the fertilised ovum and reach the adult human body with its brain and frontal cortex, so in mental regard we should start with the concomitants of such action as obtains in the fertilised ovum and reach the adult human mind with its sub-rational fore-plans of behaviour and its interpretative thought-schemata at the fully rational level. Nothing short of this, as at least the end of a long quest, can satisfy the thorough-going evolutionist. *A very long way up* in the progressive advance of reference is what is commonly spoken of as sensory experience by direct acquaintance. To take this for granted as just given, is like taking the archipallium of the brain for granted as just given. We, on our part, seek to refer sensory percipience to its proper place in an ascending scale ; and we must do so under schematic reference.

I have, then, to make clear if I can—and I find it difficult to do so—what I mean by *schematic reference* or *reference under schema*. We have tried to figure to our thought, for purposes of interpretation, the foundational relations of any m to any e under duality of nature. When influence comes in from e to m, reference goes forth from μ to ϵ. This, under further elaboration in progressive development, leads up to cognitive reference to an ϵ-situation which accords with, though it need not resemble, an e-pattern of physical events.

Take now some simple illustration of a course of events wherein the recipient organism has reached,

under concomitance, a high level of cognitive reference. My dog, let us say, shifts his position on the hearth-rug. He receives physical influence from the fire; radiant heat waves impinge on his body. Percipient reference goes forth from him and renders the situation objective to his mind. He behaves thus and thus on receipt of influence and with reference to the situation. Such is my interpretation of what I see. In seeing it I too am percipient of the situation I describe. Such *interpretation*, however, introduces much that I cannot possibly see. I cannot see, nor, as I now sit, can I feel, the influence that affects his body. I cannot see or feel the reference that goes forth from him. None the less my *thought* has reference to both, and to both *as instances of a schema* in terms of which I interpret what I do see, and a vast number of occurrences of like nature.

Now what is the kind of language one uses when there is such reference under schema? One may perhaps say that the rug has its place "in reference to" the fender; that the dog has his position "in reference to" the fire; that his first position is considered "in temporal reference to" the second in a sequence of events. One may speak of his action "in reference to" the heat he receives from the fire; of his probable feelings and his experience in behaving, of his procedure "in reference to" the objective situation as perceived by him.

But only in the last of these statements does the expression "*in* reference to" imply "with cognitive reference to" something that is objective to the mind of the dog or other percipient being. We are

dealing, be it remembered, with *cognitive* reference. If we say that the rug has its place " in reference to " the fender, we do not imply that cognitive reference goes forth from one to the other. We mean that we as rational folk contemplate or consider " this " in its setting in what we speak of as a frame of space-reference.

Now what is objective to the dog is a cognitive field of reference. To the objects in that field reference goes forth from his mind. He acts with reference to these objects. But *we*, in rational mood, interpret his change of position in terms of a spatio-temporal field of reference ; and *this* field of reference is not cognitive *only* but *also* a schematic product of reflective thought. The schematic factor is a rational construct. It has been thought out for the purpose of interpreting such changes of position as we observe or imagine, let us say within a four-dimensional frame. It is a schema devised to the end of interpreting the course of physical events. And *within* that schema we consider the events " in reference to " each other.

Within the schematic field of reference, projiciently referred from the reflectively rational mind, our thought travels in certain directions from " this " to " that." And then we may say that we think of " this in reference to that." In this sense we may give the reference of some quotation to its context, and so on. My point is that there is here no projicient reference, cognitive or reflective, that goes forth from " this " to " that." In our present context the word " reference " is used with an added determination distinctive of the rational level of thought.

In brief, we think *with cognitive reference to* a concrete situation, and *with reflective reference to* a schema for interpretation. But we think of this or that event, common to both, *in its reference to* other such events.

I seek thus to distinguish what in my judgment needs to be distinguished in some way, this or another. If the distinction, however verbally expressed, be valid, what I speak of as " in reference to " obtains for our thought in respect of *any* of the relations which may be dealt with under schematic interpretation. In the physical world *e* may stand in many modes of relation to *m*. But only under reflective contemplation is the one considered in relation to the other within some objective schema.

When such schematic reference is fully developed, we have a systematic meshwork of *cross-references*, following any kind of relation that may link " this " or " that " within the system. Any adequate interpretation is in terms of such cross-reference. A system of thought has substantial unity in virtue of the binding tie of such cross-reference as is of interpretative value. It is this that gives what I have called the added determination in reference under schema. With this added determination it is the special province of the logician to deal. My aim has been to show that it *is* an added determination distinctive of thought-process ; that until the rational *d*-level is reached, reference has not yet taken on this distinctive form ; and that the evolution of this form of reference from lower forms in subjacent levels must itself be interpreted in terms of reference under schema.

§ 40. *In Search of Common Factors*

In our childhood when schemata are beginning to take form there are many of them. Plans of action to meet circumstances many and various are already in being. Each is at first interpreted more or less independently of others under a schema that suffices for the child-mind only incipiently rational. Step by step what is at first a patchwork of schemata which severally serve for the interpretation of this, that, or the other set of events in the situations of daily life is rendered more and more comprehensively schematic through the reflective recognition that there is *something in common* to events in this patch and in that. In due course two main schemata are differentiated — one for physical affairs, the other for mental affairs. What I have called two stories begin to take form. But for long the differentiation is only partial. The trouble is that neither story seems to be continuous from start to finish ; so gaps in the one are filled in by interpolating bits of the other. This is quite good common-sense procedure and works admirably. But common-sense procedure itself stands in need of interpretation. Thus at long last arises for the philosopher what we speak of as the " demand " for an all-inclusive schema in terms of which the events common to the physical and mental schemata may be interpreted.

I take it that every constructive philosopher feels " called on " to meet as best he can this demand for an all-inclusive schema. But the call on demand is met in diverse ways. My schema may be quite different from yours. Hence it is my business to

render account of such interpretation as I can supply to meet a demand which reflective thought imposes on me and on you.

I said above that an interpretation becomes more comprehensively schematic through recognition of something in common to events in this sub-schema and in that. What, then, do I regard as common to all systematic groups of events of integral status? Ascending evolution from lower to higher (or descending dissolution with reversal of order) is common to all such events. Common, too, is the basal concept that in any integral entity there is substantial unity notwithstanding the radical duality of the diverse items of stuff in this physical regard and in that mental regard.

In physical regard there is, in any given entity, a system of action under influence, and in mental regard there is a concomitant system of enjoyment and of reference. All enjoyment is the accompaniment of action within the organism under the rubric of stimulus and response. However intricate the nexus of events may become, all percipient reference is likewise concomitant with action within the organism, and depends on the dual nature of that organism as body and mind. This amply provides for such diverse levels as we find in the story of reference. Such and such being the dual nature of the organism in which there is increasingly complex action, such and such is its objective world of reference. If there be highly differentiated retino-cerebral action, there is provision for colour reference in vision. If such retino-cerebral action have not been evolved, there is no such colour-reference.

But we are in search of something common. Is there anything in common to what I have spoken of as a pattern of physical events and a situation as objective under percipient reference? I think that unquestionably there is, at any rate where touch and vision are concerned. What we speak of as spatio-temporal relations are common to the physical pattern and to the answering situation in objective reference. At the level of naïve percipience there are, so far as I can discover, no other modes of relation of which this can be said in like sense. The task of evolution, so to speak, is to reach effective accord between the spatio-temporal relations in the physical pattern and the spatio-temporal relations in the objective situation as naïvely perceived. Even in us there is often lack of accord under conditions other than those which are normal in evolutionary progress. Hence so-called illusions in vision. But when such accord is reached we have current interpretation of some physical pattern in terms of the objective ϵ-situation as perceived. There are spatio-temporal relations of the same order in both. On these relations what we speak of as the primary qualities of entities in the physical world are based.

Now in the interpretation I offer spatial relations as such, and temporal relations as such are in themselves ineffective. One must here lay stress on *as such* or on *as analytically distinguished*. Thus distinguished one may say: Given a pattern of physical events, no change in the current course of change therein occurs in virtue of their being spatio-temporally related in such and such ways. It may, of course, be urged that they never are thus related

only. They are always related *also* under what I distinguish as influence. This is so. None the less, as analytically distinguished, spatio-temporal relations are on my hypothesis ineffective in the sense intended. But so, too, is reference in the same sense ineffective.

One does not of course deny that influence changes with distance in space. What one ventures to submit is that in the physical realm influence, and influence only, is effective in altering the course of current action. Translated into terms appropriate to the story of events within the body, we come back to the biological canon that the entire life of any organism is interpretable as an enchained sequence of responses to stimuli.

In respect of temporal relatedness this does not imply that prospective reference does not count in the concrete whole of existence within which it obtains. What it does imply for us is that only in so far as *prospective* reference in this story is concomitant with some *present* mode of action in that story are other modes of action in the body in any wise influenced. And if it be said that this, if taken literally, precludes one from saying that behaviour is influenced by expectation, or that thought influences action, I submit that one may quite justifiably use such elliptical expressions when one has stated the meaning to be attached to them. It is, for example, only in an elliptical sense that I should speak of mental energy ; for the concept of energy is, as I think, purely physical, and has respect to quantitative values of *work done under action*. It falls within the story of influence.

Within this story the rubric is: Any change of action here is determined by change of action elsewhere, in accordance with the natural plan of action of the system under consideration; all such changes are subject to a quantitative formula, to be accepted under scientific acknowledgment, unless or until instances are adduced which show that this formula should be so revised as to make provision for the inclusion of these new instances.

Now, in the human body, (1) change of action here, say, in the brain, is in large measure determined by change of action there, say in the receptor system; (2) change of action elsewhere, say in the muscular system, is in large measure determined by change of action there, in the brain; and generally (3) *any* change of action in "this" organ is determined by action elsewhere.

The question then is whether within the body instances have as yet been adduced which show that the hitherto accepted energy-formula needs revision so as to provide for these instances. It is a question to be answered on the basis of evidence in the story of influence. As I read the evidence, so far to hand, no revision is as yet required. But, under duality of nature, there is not only the story of body to be told in terms of influence; there is also the story of mind to be told in terms of reference, and in terms of enjoyment. Of conscious guidance and choice within this story there is, as I hold, unimpeachable evidence. Apart from the story of mind the words "guidance" and "choice" are emptied of all the distinctive significance we attach to them.

My contention is that these two stories tell of one

sequence of events. As such, neither can in any sense "interfere" with the other. If it be asked why there are two stories, the reply must be: Such is the foundational duality of nature of which two stories may be told.

Throughout the story of reference there is an accompaniment of bodily action; throughout the story of influence in the body there is an accompaniment of reference and enjoyment. But both are included in one synthesis; and underlying both—common to both—is substantial unity, one and indivisible. In the distinction I draw between two stories I do but echo Spinoza. For me, as for him, "substance thinking and substance extended are one and the same substance, comprehended now through one attribute and now through the other."

LECTURE IX

Self and Others

§ 41. *The Self of Enjoyment*

In this lecture I can only touch the fringe of a vast topic. We have reached the fully reflective epoch in evolutionary advance when rational schemata for the interpretation of events play a leading part in human affairs. These affairs present what we speak of as the great drama of human life in which self and others are the actors. In seeking to render so complicated a business amenable to the requirements of reflective thought, we naturally turn to the dramatic artist. What he does for us is to select, recombine, or reconstruct, salient or typical episodes. His characters are more or less generalised persons who play their parts on the stage of his theatre. That is his method of interpretation. Few are likely to doubt its value in the hands of a worthy artist.

But the dramatist may introduce mythological characters into his drama. In so doing he personifies certain "powers," on or off the stage, as if they, too, were quasi-human persons. And I take it that, as dramatist, he is fully justified in doing so. But it is open to question whether this part of his dramatic interpretation renders service to reflective thought in the kind of interpretation it seeks.

Furthermore, as dramatist he may implicitly, if not explicitly, extend his dramatic method to the interpretation of the acts of the several persons in his play. He may regard the mind of each person as itself a stage on which love and goodwill, ambition, envy, and malice, with the rest of the caste, play their several parts. In doing so he personifies these " powers " as actively striving for dominance within the mind of each of his characters. To be up to date he may select certain " instincts," and perhaps a " censor," for dramatic personification. Is there not, he may ask, just the same kind of " conflict " on the personal stage of each human mind as is seen on the larger social stage? Why should not this receive dramatic interpretation? But here again the question arises whether such dramatisation renders service to reflective thought in the kind of interpretation it seeks.

But what is this kind of interpretation? The implication may seem to be that it should be other than dramatic. That, however, is not necessarily so; for the dramatist aids us much in the interpretation of human life. What, then, is implied? I find it difficult to give expression to that which seems to me to need emphasis. I can only tentatively suggest that, unless good grounds be adduced in support of the hypothesis that there are selves other than human persons on or off the stage, they should not be introduced into the drama of human life under the guise of personified actors in the play—that is, as if each of them on his part were a self. This introduces the difficult and elusive concept of self. The human person who plays his part in human

affairs is clearly in some sense a self; but, though reams have been written on the subject, it is not easy to say in what sense. One can but try.

Let us start with an oft-quoted statement from William James's *Principles of Psychology* (vol. i. p. 291). "In its widest possible sense," he says, "a man's self is the sum-total of all that he can call his, not only his body and psychic powers, but his clothes and his house, his wife and children, his ancestors and friends, his reputation and works, his lands and horses, his yacht and bank account. All these things give him the same emotions. If they wax and prosper, he feels triumphant; if they dwindle and die away, he feels cast down—not necessarily in the same degree for each thing, but in much the same way for all."

I suppose that "in the widest possible sense," we should include also what he thinks others think of his clothes, his reputation, and his bank account. Does not this contribute not a little to his elation or depression? But I merely select this passage from James's long, suggestive, and in many respects still admirable discussion, as an introduction to what I have to say. Shall we, then, follow him and accept some such concept of self? I suggest that we should proceed on rather different lines.

Let us grant that, in thinking of his personal appearance, his ancestry, or anything that can be called "his," a man is triumphant or cast down; these "feelings" do, no doubt, characterise him at the time-being. They contribute to his enjoyment. But the things which, as we commonly say, "evoke" these feelings, form no part of his enjoyment as such.

They are what he thinks of or contemplates, and values with enjoyment in thinking or contemplating, and valuing. In so far as experienced they are, of course, correlative with his experiencing, and, as experienced, they do form part of the total situation in which the man, as experiencing, plays his part. As objectively mind*ed*, under reference, they are " in mind " ; and no doubt we may identify mind and self. But we may make mind*ing* our point of departure and seek therein the primary and distinctive character of the self. I suggest that this is the line of treatment we should take.

Let us, then, concentrate attention on that which I ask leave to call the *self of enjoyment*. This self of enjoyment is the central core of what a man *is* in mental regard—not what he *has*. Of course, in common parlance we say that he " has " enjoyment when he is " enjoying himself "—at a concert, for example, or in taking a warm bath. But what is here meant—or what I take it to mean—is not what we usually understand by possessing or owning, but rather what may otherwise be expressed as including or comprising (*cf.* § 38). At the concert the self of enjoyment includes certain æsthetic items in the stuff of enjoyment which constitutes that self ; but they go together with many other items in the substantial unity that the man then and there is in the mental regard under consideration.

What are these other items ? *All* the ways *in* which he is conscious in the broad sense at the time being—in living, in sitting, in hearing, in seeing, in remembering, in expecting, as well as in appreciating the music—all the *ings* of his experience which are

going together in substantial unity, including all objective referr*ing*. For the self of enjoyment is the centre from which all reference "goes forth." And each of these *ings*, as an item of the stuff of enjoyment, has its specific, nay even its individual, character, as the quality of its contribution to enjoyment. There is diversity of quality in the several items of the stuff of enjoyment; there is substantial unity in the manner in which they go together; and this diversity of stuff in unity of substance is the self of enjoyment.

Quite cardinal to my concept of evolution is difference of quality in enjoyment—nay more, *emergent* differences of quality. The several chords or musical phrases that we hear at the concert are different as heard; but no less different in each instance is the enjoyment in hearing. Different, too, is this or that mode of "hearing together" in the unity which includes appreciating æsthetically. Different also is the joy at the concert from the pleasure of quenching one's thirst when one gets home.

In foregoing lectures stress has been laid (1) on the progressive evolution of bodily structure under the give and take of more and more complex modes of influence; and (2) on the progressive evolution of reference, leading up, say, from the world of reference for the amœba to the world of reference for man. Here no less stress must be laid on the progressive evolution of enjoyment accompanying more and more highly differentiated physiological processes, with increasing richness in the substantial unity of the embodied self.

From this point of view, not only a man, but a monkey, a dog, a guinea-pig, a bird—nay, even a starfish, a paramœcium, an amœba—is a self of enjoyment according to its evolutionary status. Such items of stuff as there may be, go together in substantial unity, poor or rich. In physiological regard we have the life of the organism ; in mental regard we have the self of enjoyment. Under unrestricted concomitance the one is the accompaniment of the other.

The self of enjoyment, which is I, is limited to the current phase of enjoyment at the time-being. It is what it is, and as it is, at that moment including all present items of stuff in the existing phase of substantial unity. This must not, however, be taken to exclude foretaste and aftertaste in enjoyment, for they are often unquestionably present—the stress here falling on *present*.

It must be remembered that we are trying analytically to distinguish enjoyment, as such, from objective reference which is always co-present, though it need not have reached the prospective level. It may be non-cognitive and not yet cognitive. Clearly the initial and primitive form of " reading " a self of enjoyment into others than oneself falls under reference. I have ventured (*E. E.* p. 199) to call it " ejicience." It is often asked how this primitive link between self and others was established. I cannot here discuss the matter. This only can I say. If we accept the postulate that reference is no less embedded in the foundational duality of nature than is influence, and if ejicience be a primitive mode of reference, should one ask when and how it

begins? Should one not rather ask when and how it is restricted to certain objects of reference to the exclusion of others? My impression is—it can be little more than a general impression from observation of infants and young animals—that ejicience is initially unrestricted; and that only by successive steps in the evolution of reference is it restricted, in furtherance of behaviour, to those animate objects which are eventually in reflective thought regarded as other-selves.

§ 42. *The Self for Contemplation*

The self of enjoyment, then, is the integral whole comprising all the items of stuff, whatever they may be, which go together in substantial unity. Indivisible oneness characterises the substance or "subject" of self. But the constituent stuff is naught else but enjoyment. Reference also there may be in abundance. No item in James's list is excluded. All that he names may be contemplated. But it is contemplated with enjoyment. And the point for emphasis is that in man the self of enjoyment includes (1) enjoyment in just living, in naïvely perceiving, in behaving, in being emotionally affected —which may be all that there is in the cow or the bird. But it includes also (2) the further kind of enjoyment, with quite new items of stuff, in reflectively judging, in believing, in valuing, which contribute to make us what we are as distinctively human. In the animal there may be this (1) without that (2); but in man there is that and also this. In us the self of enjoyment is raised to a higher emergent

level, in alliance with reference no doubt, but with new qualities of enjoyment *itself*, with new pleasure-pain values quite distinctive of its status. The joy in poetry or music is at a higher affective level of emergence than is the pleasure in bathing or in quenching one's thirst.

Here the crucial and much discussed question arises whether one can render objective to thought this self of enjoyment. Perhaps not at the moment of its existence. So long as it is *ing* it cannot also be *ed*. When I am straightforwardly enjoying music or feeling interest in a novel, I am not (as I believe) contemplating the joy or thinking of it as contributing to the self of enjoyment that is I. But when the symphony is over, or the book laid aside, I can contemplate *me* as having been so thrilled at the time that I was otherwise engaged than in thinking of self. And, even then, I do not contemplate the then self of enjoyment that was I, but a *concept* of self which more or less closely tallies with what I was awhile since. This concept of "me" is the *self for contemplation*.

I believe that such a self for contemplation is (1) quite distinctive of the rationally reflective level of mind; is (2) always thought of not *only* as a self of enjoyment but *also* as a centre from which reference goes forth; is (3) an universalised "me," instanced in various ways; is (4) in the normal life of reflective thought a me-self in relation to others; is (5) such a self as to be specially amenable to dramatic treatment; is (6) under such treatment assigned different rôles in the drama, say in the drawing-room, in the smoking-room, and on the

bench; and is (7) liable to be regarded, not only dramatically but really, as more than one self, for example, a lower self and a higher self in conflict and striving for dominance.

I cannot follow up in detail such clues as these may afford in a bewildering and intricate maze, through which, none the less, each of us threads his way with only passing hesitation at some of the more critical turning-points.

Chief stress may be laid on the concept of me, or the self for contemplation, as, in the technical sense, *universal*. In this sense it comprises all instances of me, each of which is regarded *as* an instance, no one of which should be regarded as capable of independent existence apart from the self as a whole. We may distinguish the instances *as instances*; but we should do so always subject to the substantial unity that is their tying together in the self for contemplation. On these terms I may think of me in several capacities—let us say, to select one, as an indifferent golfer. Even so it may be the "occasional me" of yesterday's match, or the "statistical me" under present handicap, or the "historical me" from starting play till now; and so on. Or it may be the "ideal me," as golfer—rather a complex concept. It is not the ideal golfer whose perfection in play on all occasions no one has reached or ever will reach. I may cast longing side-glances at this, but, as things go, I want something attainable. It is, I suppose, a pretty consistent me, rather better in all situations than any occasional me in the past, but still *me* subject to limitations of mediocrity, and yet in some measure capable of overcoming them.

In any case this ideal me, to be realised if possible on occasion, is a factor in guidance which distinguishes a rational being at the reflective level. It is not the kind of "idea" which, as I surmise, even Julius, the orang-utan, can entertain. It betokens an emergent status which he may not have reached.

Assume provisionally that no ape has reached this status. He has none the less a self of enjoyment. So has (or is) also a guinea-pig, a two-days-old chick, a stentor, an euglena. But not every self of enjoyment has a correlative self as a concept of "me" for contemplation. This betokens a rational being who is capable of reflecting. Even the infant in arms is not yet such a rational being—save in the figure of prolepsis. But when in due course of development he becomes a rational being, when an ideal me takes form, then the presence of this is unquestionably a factor in the guidance of conduct.

I said that the ideal self is rather a complex concept. The occasional me of yesterday's match is reviewed in retrospect; that of to-morrow's match carries prospective reference; the statistical me, though conventionally stablished as "handicap of x," varies as more statistics are gathered. But the ideal self is not only a "normative" standard towards which this or that occasional me, or the statistical me, is judged to approach, or from which it may recede; it is also an end in view, a goal of endeavour. And this implies that I desire to attain this end, or to reach this goal. Desiring, however, is an item of stuff in the self of enjoyment, one among many other *ings*. Of course there is reference to the ideal self as desired, and enjoyment in such referring.

But the point for emphasis is that guidance ultimately depends on the nature of the self of enjoyment at the time-being. If, in that nature, there be no joy in approaching the envisaged ideal, nor sadness in falling short of it, is there any guidance? Is there the factor of choice that such guidance implies? At the reflective level, is not conduct a means to the attainment of such joy and escape from such sadness?

Guidance of conduct under choice of alternatives is thus raised a step up towards its highest emergent level. It reaches the status of that guidance with reflective reference to a goal of endeavour, which in our current elliptical phraseology the word "guidance" commonly means. It is guidance of action, primarily within the body but prolonged outwards in overt behaviour; it is guidance with reflective reference to an ideal self to be rendered if possible actual; above all it is guidance subject to joy in partially realising this ideal, or sadness in falling short of it. Strike out this factor in the self of enjoyment—is there then any such guidance?

But in reflectively considering such guidance, do we not always envisage the ideal self as playing its part in an ideal community in which others play their parts? And is not this where, one and all, we dramatise human affairs? We must take reflective thought as we find it. Is not the child, when he first shows evidence of passing to the stage of reflection, what we call a born dramatist? Does he not tell what happens in imaginative form, thrown on to a stage where the contemplated me and others—not less me than others—are generalised persons, in large measure, so to speak, not what they actually are

but what he would fain have them to be, though too often the characters, they and even he, do not play up to the parts he assigns to them.

The whole business is very complex. But we must accept such complexity as we find. And I think we find that each one of us is himself the dramatist in virtue of constructive imagination; himself contemplated as an actor in the imaginative drama he constructs; himself also a specially privileged spectator in the audience before which the play is enacted. But it is in the last capacity, as self of enjoyment, that he is what he is. And in this episode or that, it is the joy or sadness that is within him that he refers to the several characters on the stage of his reflective thought.

§ 43. *Value and Worth*

As contemplated, the ideal self, other such selves, and the community in which they play their parts, have worth or value. I suppose anything that is wanted may have value in some sense for a reflective person, but, as I think, only for a person as reflective. There must be an end in view recognised as such, for the attainment of which this or that is valuable or valued. It is of value as a means to that end.

If, then, we lay due stress on value as obtaining within a field of reflective thought, if we regard schemata — whether dramatised in human affairs or not — as distinctive of reflective thought, then we may characterise objective values as specalised modes in that which I have spoken of as a system

of cross-reference (§ 39) within a schema. In a physical schema they will be for the interpreter physical values; in a biological schema biological values; and so on. In presence of such objective values—and correlated with them—are no less specialised forms of joy in the contemplating self of enjoyment. This joy in valuing—this distinctive quality in appreciating thus or thus—is central. *This it is that has emergent status in the evolutionary advance of enjoyment, while the objective values have emergent status in the evolutionary advance of reference.*

Objective *values*, as such, may be regarded as the items of stuff which in our present context constitute a schema, or that which is schematised in reflective thought. The substantial going together in this distinctive manner of these items of value within the schema is that which gives it *worth*.

In drawing a distinction in this way between items of *value* within that which is schematised and its *worth* as a whole, I proceed on lines which I have frequently had occasion to illustrate. I submit that any system, some concrete instance of which we isolate for intensive consideration, has in itself intrinsic worth in virtue of substantial unity in the integration of its several items of value. Only in so far as the whole has substantial worth are its constituent items of stuff raised to the level of values. But for broader and more comprehensive consideration such a system may go together with other related systems in the richer unity of a higher synthesis. Then these subordinate systems play the part of values within the scope of a wider whole which includes them as items of its stuff. And then this

superior system has its intrinsic worth with higher emergent status. On this showing, value as such is always instrumental within some higher synthesis which has more comprehensive worth.

Take a relatively small scale illustration. The long jump "event" shows differing grades of intrinsic worth in itself; but in the wider context of the "athletic sports" it has value as an event which counts among others, and may serve to determine the worth of Oxford or Cambridge within this field of events. And if we include in yet wider purview the boat-race, the cricket-match, and so forth, success in the athletic sports has value which counts for so much within this wider context.

Applying this principle on a large scale, *mutatis mutandis*, we work up by successive steps to that system of practical endeavour or of thought which has greatest and most dominant worth. But worth for whom? For some one; for oneself or another; perhaps ultimately for oneself as, in some sense, representing the community—may one say for one's ideal self as a rational being? In any case for some self of enjoyment. Herein lies all joy in contemplating value as contributory to worth.

At the reflective level of mind one can neither consider reference apart from enjoyment nor enjoyment apart from reference. It is from the self of enjoyment, the I that I am, that reference "goes forth," is "projicient" as I put it. All value and worth have being as such only in so far as there is projicience—only in so far as, in Professor Alexander's phrase, they are "possessed by mind."

If I rightly understand Mr Alexander's position,

that which is only " apprehended by mind "—colour for example—is nowise rendered different thereby. What it is during apprehension, that and no other it was just before apprehension, and that it will remain just afterwards. But that which is " possessed by mind " is thereby rendered different as contemplated. It has a new quality, its " tertiary quality," which the mind gives it through such possession. Such a quality is value. Apart from " possession by mind " value is not yet emergent.

I put the matter in a different way. I say that all objective value is projicient. This Mr Alexander may not accept. But I think our meaning *here* is much the same. That upon which each of us wishes to lay stress is that the mind is part contributor to the constitutive nature of objective value. Where, as I hope, we may agree is that at *this* emergent level we have not only " apprehension " but " possession." Where, to my regret, I differ from him is in claiming that in respect of the secondary qualities also there is not only apprehension but possession—or, as I phrase it, projicience. We have ascending steps in the evolutionary story of reference.

Apart from such divergence of opinion on a vexed question, the gist of my contention is that what I call reflective projicience is at a higher emergent level than is the perceptive projicience exemplified, as I think, in the secondary qualities—that is, that we have a distinctive step in emergence *along the same line of evolutionary advance*. Otherwise stated, under reflective projicience the objective world is raised in emergent status. It becomes the world not only of secondary perception—that it still is—

but also the world of tertiary value and worth. Just as the secondary qualities—colour, sound, scent, and so forth—are projicient on to a world that is thus rendered objective for naïve perceptual experience, so, too, value and worth are projicient on to a world that is thus rendered objective at a richer level of distinctively human experience.

But it is *our* world, yours or mine, and for each of us primarily mine. Ours is the joy in appreciating the value and worth which are ours under projicient reference. Ours is the conduct which sets towards joy in what one may speak of as a frame of values. This frame, no less than the space-time frame of the physicist, is an ideal construct under schema, but one that tallies with something that we acknowledge as reality. How this or that integral cluster of physical events sets in the space-time frame depends on its nature within the field of influence. How this or that cluster of mental events sets in the frame of values depends on its nature within the field of reflective reference—depends, that is, on the self of enjoyment with its many-hued differences of quality, in joy, or in sadness.

§ 44. *A Social Episode*

James speaks of the "warmth and intimacy" with which I contemplate the me. One reads into the me of contemplation a transcript of the self of enjoyment one was or hopes to be. But a generically similar self of enjoyment I read also into him—that other self—perhaps not without sympathetic warmth and intimacy. In any social episode, which one

is pretty sure to dramatise, the interplay of self and others is subtle and complex. I select one which may serve to illustrate in limited yet compassable form some of the many points which seem to call for emphasis. I have already touched on it in passing.

I hope to play golf to-morrow. In doing so I now enjoy contemplat*ing* the contemplated *me* of to-morrow engaged in a friendly contest; and I read into this me a self of enjoyment on the links. If I win the match I shall, as I expect, be moderately "triumphant"; if I lose I shall be, in a measure, "cast down." Which of these it will be, or a possible halved match, I cannot tell; it lies in the lap of the future. But as I now think of to-morrow's me, I am even now alternately touched with elation or depression, subject to "if I win" or "if I lose." When I think of me in last week's match I am now joyful. That event is irrevocably decided. It puts me "one up" on a series of matches; in this context it has value; the worth of me as a golfer is so far enhanced, if I played a little above my usual form.

Thinking, then, of to-morrow's me I have foretaste in enjoyment; thinking of last week's me I have aftertaste; only on each several occasion do I actually taste the enjoyment proper to that occasion. And this is the *only* occasion on which it is tasted as it then is. On each occasion I am I as self of enjoyment; and in strictness never quite the same I. The I of to-morrow's game when it comes—pretty certainly with unexpected features—will be in some measure different from that of last week's

match. But the concept of me is universalised to cover these and other instances.

And this me in last week's instance I think of not only as a self of enjoyment but as a self from which reference went forth. Moreover its reference then in sensory perception, and my reference now in imagery, contain very much in common. Furthermore, there is much that is common to his (the other's) reference then, and my reference then and now. We take all this for granted; but it is a link between self and other. There is, too, much reflective reference. Each of us plays each stroke subject to the regard of his opponent, and subject, in a sense, to the regard of the club of which we are members, whose corporate eye is then and there represented by his eye and mine, scrupulous among other things in the matter of "replaced divots."

In so far as I think not only of me but of him—of him as playing every stroke in my regard, of me as driving or putting in his regard—this mutual regard constitutes a social situation. But it is also a specialised or "typical" situation. On the links we are golfers, and whatever else we may be does not much matter in this context. We may talk between whiles on various subjects; we may admire the view, listen to the skylark, tell or hear about Wembley, or a philosophical conference, and so on. But that is not the business on hand. In the typical situation each belongs to the type "golfer." And, if one likes so to put it, one may say that through the eyes of each the whole community of golfers looks out on every phase of the game. This communal regard is part and parcel of the situation as

social. Even in play it is as representing the type that I am triumphant or cast down. My self of enjoyment is sensitive to the social regard of others. The joy that I experience in a stroke that has value in the game is enhanced by the appreciative attitude of my opponent (if he be a sportsman) even when he omits to mention it; and the whole community of golfers—represented by my self of enjoyment as communal—rejoices. Did I not say one is pretty sure to put things dramatically?

If apology be due for harping on trivial incidents in a mere game instead of dealing comprehensively with human life, let it be made. Human life is so large a universe of discourse that I elect to focus a limited, if trivial, but anyhow concrete, social episode. I take it for granted that my opponent "plays the game." If he did not, should I meet him weekly on the course? But there are men who in a secluded hollow shift a cupped ball to a better lie, or, having foozled a stroke in the rough on competition day, accept in silence the statement of the scorer that he records a "four" when they have played "five," and so on. On them, if the facts be so, one passes judgment of the ethical order. There seems to be a special attitude towards a man whom one detects in, or suspects of, such practices. One rather despises him; one feels one cannot trust him; one resents such procedure; one wonders what value he attaches to it; one regards him as an outsider; thinks that he should not have been admitted to *our* club. One is sorry for the club—sorry, too, perhaps for him. One has in view the moral worth of the man as instanced by incidents in his procedure on the

golf course, under certain conventions no doubt; and one may suspect that there are other incidents in his life which detract from his worth.

Underlying the mental attitude as a whole, as a characterising feature, is a specialised form of sadness, and a touch of joy that one's friend is not of this class, that when one's eye is not on him one can trust him implicitly, that one's club contains few members of the wrong sort. It is difficult to describe; and yet there does seem to be a distinguishable *quality* of joy or sadness which characterises the self of enjoyment in presence of acts of moral value and persons of moral worth.

Let us grant, however, that the men whom one meets in friendly contest play the game. Then one may, on occasion, say: That was a pretty stroke, played with grace and ease, though it didn't quite come off; or, That was a good stroke—it got there all right though the player's style is ugly; or, That was a bad stroke—he intended to loft the ball and topped it instead; but however bad and ugly, it was quite useful, for there lies the ball within a few feet of the pin. Each has value in some sense. The third contributes to winning the hole; the second betokens effectiveness in play; the first is an example of good form. I take it, however, that for the golfer the third carries little joy in appreciation—merely, perhaps, the duffer's pleasure in undeserved good luck, pleasure not shared by his opponent. Of joy in the golfer's communal self, if he as yet have one, there is little or none. Useful, in a sense, one assigns to it little true value. That leaves us with value as effective utility and with

æsthetic value. And I think that joy in appreciating one or the other exemplify qualities of joy which, so to speak, feel quite different.

But one may also say: That shot shows how true was the judgment of distance and allowance for wind. Here accuracy in play, a matter of practical action, implies a coherent plan of action, a matter of knowledge. We speak of the anticipatory plan in mind as true, in that it contains no incoherent items of error; and we speak of the executive play as true in so far as it accords with plan in mind. But this accordance or correspondence of plan of action with execution in act to meet the given circumstances is but a wider form of coherence, inclusive of both. And there is, I take it, a specific kind of joy in the appreciation of such truth-value—a joy to which the hovering kestrel, for all his accuracy of poise, is a stranger.

Against a serene background (let us hope) of joy in "playing the game"—and if we have no joy therein shall we do so?—there stand out in the self of enjoyment at least three other kinds of joy; that in presence of truth-value, of utility-value (sometimes spoken of as "economic") and of æsthetic value. And, as I hold, they all feel different with distinguishable qualities in enjoyment. The needle of the self of enjoyment sets in an objective frame of such values. Each kind of joy is a higher order of pleasure with positive sign. If we speak of the pleasure-pain principle as dominant in secondary behaviour; it is superseded in reflective conduct by a joy-sadness principle of higher emergent status. But we never get rid of our secondary nature, no

matter how well-developed may be our tertiary character. Pleasure-pain does not go when joy-sadness comes, though in the flux of our life one or other may be dominant.

But if the self of enjoyment be one and indivisible in substance, then in what sense can we distinguish a communal self—the typical self within us that judges and appreciates in some fashion independently of one's individual idiosyncrasy? Professor Alexander contends—and rightly as I think—not only that all values are "possessed by mind," but that the mind that possesses them is that of the type, rather than that of the individual, though it finds expression through him. Hence a man "judges himself with the social eye, as in conduct we judge our own morality by our conscience which is the vicegerent of society" (*S. T. D.*, ii. 260, *cf.* W. K. Clifford, *Essays*, ii. 113–14). And this is applicable to all values. "What is true, good, or beautiful, is not true, or good, or beautiful, except as so combined with the collective mind"—or, rather, with "the standard mind," that is, one that "is not subject to the weakness of varying individuals, but represents the judgment of the collective as a whole" (pp. 240–41). But how should these statements be interpreted?

Let us look at the question from the dramatic point of view that introduces "the fiction of the impartial spectator beloved of the eighteenth century." I now contemplate an instance of me awhile since failing to hole a short putt on the last green, and an instance of him smiling thereat. I read into the then me a self of enjoyment badly cast down, and this distress I now re-enjoy with "warmth and

intimacy." He no doubt can re-enjoy his triumphancy as I cannot with the same warmth and intimacy. He smiles again when we compare notes. Where is the impartial spectator? Is there a third self of enjoyment that is neither triumphant nor cast down, only sad in contemplating a deed ill done? There is not, save under picturesque dramatisation. There is not him and me and the golfer. But there is the golfer's point of view in him and in me. The self of enjoyment is pretty complex in items of stuff. Distinguishable from individual depression or elation, however insistent, is the socially "detached" contemplation of the worth of that putt in and for itself.

This attitude towards sheer worth, whether it be his putt or mine, my afternoon's play or his, whether it have value in determining a halved or lost match; *this* is a communal factor in the self of enjoyment of each of us, and as factor it carries its distinguishing quality of joy or sadness—in picturesque phrase, that of the impartial spectator. It varies, of course, with different persons, and is sometimes spoken of as the impersonal factor. It is a mark of what we call a "sportsman" on the golf course and throughout life. It is this communal factor in presence of any instance of objective value—this "impersonal" joy or sadness developed only in persons of fullest worth—that gives to the self of enjoyment its socially emergent status.

§ 45. *From Pleasure through Joy to Love*

I have spent so much time on the golf course that the question may well arise: What value do you

attach to such illustration of your topic as it may afford? Well, it is just the kind of episode that occurs in ordinary life. Seldom, if ever, on the links do I mention "values." But they are there all the while *in reflective side-glances*. For it is only when one reflectively considers human life under schema that the concept of value is in place. And if I say that, under schema, *anything* may have value and that, apart from schema, *nothing* has value, I do but emphasise the reflective *attaching* of values—its projicient reference from a mind that has reached a distinctive stage of personal development under social evolution.

Now unquestionably we do "attach" value to pleasure and to joy. And we do attach different values to the varied pleasures of sense—which we share with the lower animals—and to "economic," moral, æsthetic, and intellectual joys. There is a valuation of values in accordance with some scale of such values—mine, or yours, or communal. Under reflective reference such valuation is rational and leads up to purely intellectual knowledge. Under enjoyment there is this or that quality, felt in contemplating, or read into the self—me or other—that is contemplated. It is in the self of enjoyment that all pleasure and all joy have being—there and *au fond* nowhere else.

Quite central is the self of enjoyment concomitant with all the events that are going on with substantial unity within the body. From that centre goes forth all cognitive and reflective reference. In accordance with the nature of that self there and then, my conduct and that of others severally takes direction or is consciously guided.

But it is an ever-changing self, passing from one poise to another. Now pleasures of sense—dramatically regarded as the lower self—may be dominant; now some reflective end in view may be uppermost. In what is dramatised as "conflict" there is self-sacrifice. Here it is commonly the "lower self" that is said to be sacrificed. But only too often it is the "higher self" (if we must e'en dramatise) that is deliberately offered up on the altar of sacrifice. And awkward situations arise when one is not quite sure which is which.

Take a concrete case. A is dining with B. It so chances that A has been taught by a wise mother to exercise self-denial in little things, for example, say at dinner, to fix upon something he particularly likes, and says to himself: "Not for me, to-day." Now B is a connoisseur in port. That for A, on this occasion, is Not for me. But when the ladies have left the room B takes the end of the table next A. "What!" he says, "Taking no port! I got out a really fine wine *on purpose for you.*" "That was most kind of you. I am sure I shall like it. . . . Yes! that's the good old sort." Which self was sacrificed, the higher or the lower? Anyhow it depends on A, then and there, which *is* sacrificed. And it depends on A, in subsequent reflection, whether he is glad or sorry that he did so act.

Now it may be said that A was glad enough to find any excuse for gratifying the bibulous propensity of his lower nature; or, that he was an amiable weakling with no tenacity of purpose. Or it may be said that A was loath to disappoint B. Other things may be said. Each serves in some measure

to reveal the character of him who says it. Let us assume—I would fain assume—that it *did* hurt A to disappoint B. Then there is a factor in the situation on which due stress should be laid. One may call it friendliness, or good-will, or fellow-feeling; even amiability if you like. I ask to be allowed to include these and the like under the generic title of *love*.

By love I here mean not only what one feels towards one's wife, one's mother, one's son, one's most intimate friend; but still only what one feels primarily in respect of *some person*, or secondarily, perhaps, under dramatisation towards some personified concept such as one's country or humanity. That excludes "love" of one's favourite arm-chair, B's port wine, and the like—apart, of course, from poetry, in Rupert Brooke for example. Its distinctive reference is, I think, to *the worth of a person* for what he is—on the understanding that no person is worthless, though there are, of course, grades of worth. No doubt his acts have severally value for the community. But the worth of a person lies in the substantial unity of the items—lower and higher throughout the whole gamut—that go together to constitute his self of enjoyment.

It is doubtful whether the community have a self of enjoyment. But each of us has a communal factor within himself. "Where," said the scoffer, "is this England for which you profess that you are ready to die?" "In my heart; that, when it is still, she may live on in the hearts of her people." Self-sacrifice is raised to a higher order. It is between selves as communal that worth appeals to

worth in the name of love. One's country may have, in cold logic, no collective self which may answer to the appeal. None the less the community has worth—substantial worth; and the more its several members as items of its stuff go together in the binding tie of love and good-will, the higher is the grade of that worth.

It is within the self of enjoyment—there, and *au fond* nowhere else—that love has being. Thence it goes forth in reference to others. It is through attachment in the sphere of worth that A loves B, and refrains, because it hurts, from thwarting any expression of his worth.

When love or good-will and its antithesis, say enmity or ill-will, come into the reflective picture, there is a quite specific quality of joy or sadness in contemplating them—at any rate to me they feel different, which perhaps is all that one can say. And it is always within us—each of us severally—that this joy or sadness, with its poignant flavour, has place. Paradoxical as it may seem, it is only in so far as the joy and sadness imputed by us to others are ours or possessed by us that they are factors in such guidance as we may exercise in social affairs. No matter with what conviction of assurance we acknowledge that they are theirs too, still within *us* like joy or sadness must be felt—must be part and parcel of the self of enjoyment which we are—in order that they may afford guidance in our own course of action. Your joy cannot guide my action unless it is not yours only but mine too.

Starting then with pleasure (or if one take the negative standpoint with pain) in the sensuous life,

proceeding upwards to joy in any kind of value, and reaching a yet higher form of joy under the integrating tie of love and good-will, the emphasis falls throughout on the affective qualities proper to the self of enjoyment. So long as it is regarded as a matter of emphasis, one may say that in evolutionary progress all conscious advance has been through upward stages of development of the self of enjoyment as *affective* and hence also *effective* in guidance.

I need not again ring the changes on the part played by foretaste and aftertaste at all these stages of advance. At all stages taste must precede foretaste in order that this foretaste in revival (which is inverted aftertaste) may point the way to renewal with a further increment of fully tasted enjoyment.

Nor need I again insist that, when higher affective forms come, the lower forms do not go, though they may be lifted under reflection to a higher status. The animal relations of the sexes (misnamed love) may be blessed through love. Human love and good-will no doubt *involve* the " mutual aid " which seems to carry pleasure far down in the animal world. But, if there be any validity in the concept of emergence, this is not yet love. The mental attitude of the human mother to her husband and her child is on a different level of emergent evolution from that of a lioness to her cubs or to their father. Concepts of worth and value, the affective qualities of joy and of love, may not be present in the animal mind ; or, if they be present, they betoken the reflective stage of mental development.

Be it remembered that we have focussed attention on the self of enjoyment as central. In doing so

there is implied no denial of the evolutionary part played by cognitive and reflective reference in ascending stages of mental development. Nor is there any ignoring of the part played by self in the guidance of endeavour. Apart from such reference the central self would not be what it is ; apart from guidance in the light of such reference the conditions under which the higher affective qualities in enjoyment emerge would be absent.

None the less, as a matter of emphasis on what seems to me to be central, I venture to express my belief that the knowledge begotten through reference, and the conduct which is the outcome of endeavour, are *enlisted in the service of joy and love* to the end of developing within the person a self of enjoyment, with communal status, increasing in the richness of substantial worth.

If it be said, by intellectualists on the one hand or by voluntaryists on the other hand, that this gives primacy to feeling—so be it. Quite frankly I assign primacy to love. And if it be said that this is a doctrine of hedonism—again so be it. But it is hedonism quickened by emergence. It gives sensuous pleasure its due place and yet lays chief stress on joy and on love in presence of value and worth in human persons.

LECTURE X

Divine Purpose

§ 46. *Plan and Purpose*

Reiterated stress has been laid in foregoing lectures on natural and determinate plans, and on integral entities of differing status, as affording existent instances of this or that subsistent plan.

No less stress has been laid on unity in substance and diversity of items of stuff. Within any integral system the instances that constitute its stuff, as existent, are "here or there," "now or then"; but the substantial unity of its plan, as subsistent, is free from all such restrictions spatial or temporal. This does not imply dualistic independence of the existent and subsistent, but their monistic interdependence within one realm of nature.

So far, save incidentally, any given entity, whatever its status as a system of natural events, has been accepted on the evidence as "a going concern." Naturalism takes events as existent and in being. And it is clear that in the absence of events as items of stuff disclosed under analysis there can be no substantial unity in synthetic togetherness within the system of this or that entity. For naturalistic treatment, then, we loyally accept as existent (*a*) the go of events, and (*b*) such going together as we

find. We accept also as subsistent (*c*) the determinate plan of their going together.

In physical regard the energetic go of events, actual or potential (in an accredited sense of the word " potential "), is for naturalistic interpretation accepted either for scientific policy or under acknowledgment, as constant in amount in any " closed system "—and what the physicist calls nature is thought of as such a closed system. But, subject to conservation of energy in progressive interpretation, more refined to-day than a generation ago, there may be interchange of action in modes many and various. And these modes of action are " given" in an ascending hierarchy with new modes of relatedness, in a series of ascending steps along different lines of evolutionary advance.

Now, so long as we deal with natural events in physical regard, we need not ask the question: What gives to events their initial go ? or the question: What gives to them this or that determinate plan of the manner of their going at this or that stage of their evolutionary advance ? or the further question: What gives the comprehensive plan of emergent evolution — a plan that comprises all relevant physical events at all stages of their natural advance ? Although we use the word " given " or " data " it need not, in this context, imply a giver. Of course, there may be a Giver—let us say God—or there may not. But if some say: All advance is attributable to God; and others say: No advance is attributable to God; it is difficult to see how either party can adduce argument which shall carry conviction to the other

party so long as the argument deals only with the advance which both accept. If for both parties what we call the facts are the same, the difference must lie in the mental attitude towards what one party *infers from the facts*, and the other party does not.

In terms of attitude an important issue is thus raised. But in physical science this issue is kept in abeyance. The physicist in his laboratory or observatory seeks to elucidate determinate plan; his attitude towards the concept of Divine Purpose in the evolution of the molecule or the crystal is, in strictly physical regard, so far agnostic.

If, then, life be interpreted in physical regard including what is spoken of as physiological to distinguish the higher status of the organism—the attitude (to which the adjective "naturalistic" is now applicable) is still agnostic. The physiologist in his laboratory seeks to elucidate determinate plan. For naturalistic treatment physiological action does not differ in principle from other modes of physical action, though the field of influence within which this kind of action occurs is such as to disclose a new plan at a higher stage of evolutionary advance.

And what of mind? If this or that sequence of mental events be concomitant with such and such sequence of physiological events, then it, too, falls within the scope of the determinate plan of emergent evolution, though each sequence must be considered in appropriate regard. So long as the attitude is towards determinate plan, this attitude, in so far as avowedly naturalistic, is still so far agnostic. Here, indeed, the "label" of Huxley's choice is nearing its full significance.

Hence, even in respect of mind, there is no need to ask the question: What gives to mental events their initial go? or the question: What gives to them this or that determinate plan of their manner of going at successively higher levels? or the further question: What gives the comprehensive plan of emergent evolution—a plan which comprises mental no less than physical events? In so far as mental events are in being as existent, in so far as a determinate plan of their going is in being as subsistent, who or what gives them does not concern the empirical psychologist at any stage of his inquiry into "matters of fact." This means that a mind as a natural system of enjoyment, with such and such modes of objective reference, does not exemplify what philosophers distinguish as effective causality.

Does this rule out purpose? That depends on what we mean by purpose. It clearly does not rule out Divine Purpose. For the agnostic position—that which is accepted under naturalism—is professedly non-committal. The agnostic says: There may be what you call Divine Purpose or there may not. I neither assert nor deny. It is not for me to profess belief or to express disbelief. But he may add with Huxley: "The philosopher founded in naturalism . . . is compelled to demand that rational ground for belief without which, to the man of science, assent is merely an immoral pretence."

On this understanding Divine Purpose is "ruled out" only in the sense that it lies beyond the purview of naturalistic interpretation. So we must ask whether, in naturalistic interpretation, *human*

purpose is ruled out. That again depends on the connotation of the word "purpose."

Given in restricted concomitance with certain physiological events, say in the frontal cortex of the cerebral hemispheres, a schematic plan in mind with anticipatory reference; and given foretaste in joy of its prospective realisation; something happens. There is, if all go well, what we speak of as attainment of a reflectively envisaged end in view. Intervenient between envisagement of end in view and attainment of end-state there are a number of contributory events. They may as yet in large measure elude our attempts at analysis; but they afford in enjoyment a substantial net result which the empirical psychologist may speak of as impulse. If all this, and the like, fall under the heading of human purpose, it cannot be said to be ruled out.

What then is ruled out in naturalistic interpretation? Impulse as efficient cause that intervenes *ab extra* as directive of the course of physical events is ruled out. In brief all that is distinctive of the hormic theory is ruled out. And what is distinctive of that theory? That minds—it is better to use the plural since the theory is professedly pluralistic —belong to a disparate realm of reality; that they enter into possession of the bodies that they use as their instruments; and that these minds, *and they only*, are givers through their activity.

What we must realise, then, is that the word "purpose" has a different connotation for psychologists of different schools. And the chief differentiating feature for the hormist school lies in the concept of activity as distinctive of each individual mind which,

as anima, enters into possession of this or that assemblage of mechanisms in the material body. Naturalism, though it need not deny, has no concern with such individualised and specially privileged centres of animistic activity in a disparate realm of reality. Its attitude is agnostic. There may be such a disparate realm with individualised centres therein; or there may not. Dualists affirm that there is. That is their firm belief. But the philosopher—whether founded in naturalism or not—seeks for evidence. Only in the absence of such evidence as for him carries conviction can he maintain an agnostic attitude.

Now for *this* belief I can find no such evidence as, for me, carries conviction. If then I believe in Divine Purpose my belief must be consonant with my disbelief in any form of dualism. In other words if there be Divine Purpose it must subsist within one realm of reality since for me there is but one.

The word belief implies an attitude of mind, and something objective towards which there is such an attitude. With regard to the attitude, all that one can say is that in some persons such an attitude towards Divine Purpose is real and genuine, and that it has for them a specific quality of enjoyment—let us say spiritual joy. But what reality, for it is in some sense very real to them, is objective to this attitude?

§ 47. *A Religious Attitude*

Huxley speaks of the cosmos as "a changeful process, in which naught endures save the flow of energy and the rational order which pervades it."

May we here for cosmos write nature? If so, nature must be taken to include human nature. Man is sometimes called a microcosm. But for us there is no dualism of microcosm and macrocosm. Human nature is part of and one with the rest of nature; and all that happens in and to a man falls within cosmic process.

But Huxley says that "social progress means a checking of the cosmic process at every step and the substitution for it of another which may be called the ethical process." And he bids us "understand, once for all, that the ethical progress of society depends, not on imitating the cosmic process, still less in running away from it, but in combating it." Turn, however, to a note (20) to the "Romanes Lecture." It runs: "Of course, strictly speaking, social life, and the ethical process in virtue of which it advances towards perfection, are part and parcel of the general process of evolution." Cosmic process may therefore be taken in one of two senses: (1) that which, for evolutionary treatment, includes ethical process; and (2) that to which the ethical process is in some sense antagonistic.

In saying that all that happens in and to a man falls within cosmic process I use the word "cosmic" in the former sense as equivalent to natural. With the main drift of Huxley's contention I am in full agreement. But I should express it differently. I should say: When in the course of emergent evolution reflective process supervenes on cognitive process the course of cosmic events is no longer the same. Let us make clear in what respects it is different. It is certain salient features of difference that Huxley was concerned to emphasise.

The fluent cosmic process in nature includes, then, ethical process in human nature. Huxley says that rational order pervades it. He does not say "pervaded" or "will pervade." He uses the comprehensive present tense "pervades." Of the rational order, therefore, we may say that, in this comprehensive sense, it *is*. If, in what I speak of as a religious attitude, this rational order be regarded as Divine Purpose, it too, in like sense, timelessly Is.

But it may be said that in human purpose for empirical treatment there is *first* anticipatory plan, *then* attainment, and *thereafter* joy in fulfilment. If, then, this frankly temporal sequence be bracketed within a timeless Is, Divine Purpose can have nothing in common with human purpose. That it has not *this* in common may be freely admitted. Nay more it may be admitted no less freely that a concept of the timeless, as a limiting concept, eludes our grasp, though reflective thought may reach out towards it. But even in considering human purpose, do we not reach out a long way towards it? Do we not in some measure bracket the sequence? Do we not commonly say that the whole sequence, or the sequence as a whole, is included under what we mean by purpose? In any given instance of human purpose, there is substantial unity, though the mental events are sequent items of stuff. Furthermore, if the end in view carry foretaste of joy in satisfaction; and if realisation carry retrospective reference to the prior end in view that has now been attained; there is at least some temporal interpenetration of first and last even in human purpose.

In strictness we can grasp, and in that sense conceive, neither the superior nor the inferior limit of the temporal. Each as limit—under an accredited technical definition of the word " limit "—is *beyond* the temporal. And this applies not only to the timeless or eternal at the all-embracing limit, but also to the timeless at the instantaneous limit of the abstract now. We exist *between* these limits; in that sense our existence is limited and finite.

Next as to the concept of activity. I have again and again urged that naturalism can get along quite well without it. None the less most of us who are in search of a consistent world-scheme feel uneasy without it. We start with a current assumption. After considering much pertinent criticism, some of us, and I for one, end with a concept of activity, under acknowledgment, as part and parcel of Divine Purpose.

Whereupon it will be said that after rejecting activity, so prominent in hormic theory, I now, in violent *volte face*, accept it. But what I reject is activity as it is conceived under dualistic doctrine —the activity restricted to this or that mind as anima; the activity of a dozen or so individualised " instincts "; that of disparate centres of activity dramatically personified. The acknowledged activity in Divine Purpose is monistic to the core. It is that activity which is manifested in *all* action—in that which obtains in the atom as in that which obtains in man, each according to its status. If it be said that such a monistic concept of activity, universally but differentially manifested throughout nature, belittles man and dethrones him from his high estate, I cannot agree. But I am

more concerned to give to Divine Purpose its due—to enthrone God rather than to dethrone man. If in some slight measure Divine Purpose be manifested in and through me, I am thankful and claim no more.

I must now pass on to emphasise what is essential to Divine Purpose in its relation to emergent evolution. My concern hitherto has been with integral *advance* in evolutionary process—that is, with what I conceive to be a rational order of *progress*. Spiritual regard is now in focus. In that regard I believe that evolutionary advance and progress is a manifestation of Divine Purpose. We must not ignore the presence of evil; but should we regard it as a manifestation of Divine Purpose?

Revert to emergent evolution. What is the position there? We deal with evolutionary advance without ignoring what is patent enough—that there is also retrogression under dissolution or disintegration. Perhaps we may say: Only in so far as, in complex entities, dissolution is in some way contributory to evolution, does it come within our purview. Perhaps we may add a reminder that any given instance of dissolution and consequent regress implies prior evolution in order to give that higher status from which there is a fall to some lower level. Even so, however, we have to reckon with dissolution as co-present with evolution, nay more, in some sense *contributory to* evolution. Can we say, then, that in like sense evil—or, in spiritual regard, let us frankly say sin—is contributory to the manifestation of Divine Purpose? I think not.

I speak of sin "in spiritual regard." Apart from spiritual regard has the word "sin" any meaning?

I substitute " sin " for " evil." Why ? We often bracket " sin and suffering " as among the " evils " of human existence. But surely we ought to distinguish. Suffering may be contributory to advance ; and we may discuss the value of suffering, or more broadly the value of pain. In spiritual regard sin is always *unvalue* and leads to retrogression not advance.

But we have here to ask the more general question : In what sense can dissolution, the antithesis of evolution, be none the less contributory to evolution ? Does our doctrine of levels throw any light on the matter ? May we say that, given within this or that integral entity any two emergent levels, say B and C, dissolution (or some measure of dissolution) at level B is contributory to evolution at level C ? Surely in presence of the available evidence that is just what we find. In the concrete instance of an organism we find that some measure of disintegration (katabolism), at the physico-chemical level B, is contributory to the evolutionary progress of life, at the higher level C. If this be so—and I think the principle runs through all the emergent levels—it seems that evolutionary advance at a higher level entails retrogressive dissolution at lower levels ; and that, to put the matter picturesquely, much at the lower level must be unmade that a richer entity at the higher level may be made.

Let us put the matter still more picturesquely, even if the phraseology may not bear close scrutiny. Let us provisionally accept the saying that we die hourly and daily (at level B) that we may live more continuously (at level C). If, then, still speaking figuratively, sin be the death of the spiritual life,

may we in like manner say that we sin hourly and daily in the flesh (the lower level) that we may live more continuously in the spirit (the higher level) that is one with Divine Purpose? We may surely say nothing of the sort. Sin is not disintegration at a lower level that there may be further advance at a higher level. Sin is disintegration at a higher level that events may run their course at a lower level. It is purely retrogressive and in no valid sense contributory to progressive advance. All attempts to explain its presence in our midst may embrangle us in grave difficulties. Let us not add to them by attributing sin to Divine Purpose. It cannot be denied that sin *is*. But if so, must we not amend Pope's oft-quoted dictum and proclaim the stupendous *error* of those who smugly say that "whatever is is right?" For many religious people Divine Purpose has supreme worth. All that is really contributory thereto, including much suffering, has spiritual value. Sin is nowise contributory thereto. In spiritual regard it is the crowning instance of unvalue.

That sundry doctrinal questions may here be raised is obvious enough; but it does not lie within my province to deal with them. All I am concerned to urge is the emergent point of view which may briefly be stated thus: Just as with the advent of the reflective attitude values and unvalues come into being as possessed by mind, so with the advent of the religious attitude a yet higher order of spiritual value and unvalue comes into being. The emphasis is on the newly emergent attitude of mind. Without denying that rational judgment, with its liability

to error, plays its part in objective reference at this level, what I deem essential is the newly emergent quality of joy in the presence of spiritual value and of sadness in presence of sin as spiritual unvalue.

But what more precisely do I mean by this spiritual attitude? The question is crucial. It invites a disquisition on the wide divergence—the bewilderingly wide divergence—in the usage of the word "spiritual." But that would carry us too far afield. I must rest content with a summary statement of what the word means in *my* usage. In that usage it implies a new and emergent attitude, on the part of a person who has reached the requisite status, towards Divine Purpose as its objective.

This attitude I speak of as a religious attitude—confessing that for me it is *the* religious attitude. It is, I think, different from that towards utility, or beauty, or truth, or even moral goodness. It is, as I put it, supervenient on them; but it does not supersede them in any strictly antagonistic sense. Even on the golf course, where the attitude towards value is emergent, this may (or may not) include an attitude towards "playing the game," even there, as *consonant with Divine Purpose.* If, then, we distinguish the lower values from this higher value, they may be present without it; but it is, I think, never present without one or other, perhaps all, of them, though with differing emphasis. This implies that spiritual value stands at a higher emergent level than economical, moral, æsthetic, or intellectual values, though one or all may be also "possessed by mind" concurrently with spiritual value.

And I submit that in presence of instances of spiritual value—still more in the presence of the supreme worth of Divine Purpose to which they are contributory—there is for some of us joy in a form that has a new and emergent quality. The self of enjoyment in such a religious person is touched to finer issues of joy and of love.

The stress so far is on attitude. I take it that what Mr Alexander speaks of as "possession by mind" implies a mental attitude. His contention is that the possession by mind of values *does not deprive these values of reality*. "On the contrary they are a new character of reality . . . which arises through the combination of mind with its object." Economic, moral, æsthetic, and intellectual values, as objective, are characters that are emergently new and yet none the less characters of reality. But in some persons—those that have reached the level which Mr Alexander speaks of as that of "deity"—there is in spiritual value that which, as possessed by mind, is objective to a yet more highly emergent attitude.

Now whether we call it emergent or not, this new mental attitude—this direction of reference to Divine Purpose as in some sense objectively real—does unquestionably characterise some persons, and is, as I think, a distinctively religious attitude. It must be reckoned with. It affords to many persons that quality of joy in the self of enjoyment which they cherish above all others. But may it not be, as some aver, merely subjective? Is Divine Purpose aught else than a figment of the creative imagination?

§ 48. *Reality of Divine Purpose*

In what sense is a figment of the creative imagination unreal? There is surely a sense in which it claims objective reality. Let us ask what this means. There is admittedly an attitude of mind which in some persons, if not in all, is in due course in being and, as I think, emergent. That at any rate is real. It implies objective reference which goes forth to that which is suitably embodied, let us say in verse or prose. What it embodies it may be difficult to define. I suppose we may characterise it as that which we mean by a figment of the creative imagination. This has value of some sort, let us say æsthetic value. But value is an emergent character of reality. It may arise, as Mr Alexander contends, only "through the combination of mind with its object," where for him, as new realist, the "object" is non-mental. But, as he says, this dependence on mind does not deprive it of reality. On this showing, then, the figment of the creative imagination has some kind of reality—shall we say æsthetic reality?

It may be said, however, that this is merely the subjective reality which no one is concerned to deny. But does not ambiguity here creep in? Is there not something rather puzzling in the statement that the objective reality of that which has æsthetic value, under reference, is merely subjective?

There is at least comfort in finding somewhat that no one is concerned to deny. What is it? Primarily I think the attitude of mind which some one says is part of his experience. But there is more than this.

Take a concrete example. A Persian poet says: "The sun sinks down in the ocean and azure-hued vapours arise. It is Nature's incense of devotion perfuming the heavens." If any one care to say that I do not value the thought thus expressed, and that I have no joy in reflectively contemplating it, well, let him say so. I infer that *he* is not thus affected. There is, for him, neither this attitude of mind nor that objective reality to which reference goes forth.

I choose this example because for me there is here not only æsthetic value in poetic "vision" and expression, but also spiritual value in the thought thus expressed. I am, of course, quite ready to grant that the man of science may discuss what happens in terms, say, of evaporation. I raise no objection if he assert that, from the point of view that emphasises this scientific attitude, one cannot take the statement literally; or even if he proclaim that he has "no use" for the whimsies of a poet. None the less there is for some of us the poetic attitude also. And there is for some of us the religious attitude towards that which for them is an illustration of Divine Purpose. They would probably say that the statement is not meant to be taken literally—that, for example, the perfumery of incense is not to be discussed in terms of receptor patterns in the Schneiderian membrane. It must be discussed in terms of the subtle imagery of poetic or religious symbolism which for some people has value, though for others it may have little or none.

It will still be said that though the subjective attitude falls within reality in the sense intended—

purely subjective—it does not follow that in a figment of the poetic (or religious) imagination there is any objective reality. How can there be objective reality if there be no accordance with well-established facts of observation ?

I venture to think that this implies a change of attitude. What is here spoken of as objective is not æsthetic value or spiritual value, but truth value *under an implied definition thereof*—namely that what is true must be literally true under cognitive reference. Thus we shift the *venue* to truth value as in some sense real.

I suppose that there are many who would contend, or at least admit, that Wordsworth's " Intimations of Immortality " is the work of a true poet, nay more of a truly religious person. And yet some of them might urge that the theory of memory which it embodies cannot be accepted as true. They would perhaps say that the cardinal fifth stanza aptly illustrates what they mean by a figment of the poetic imagination backed by strong religious conviction. But even so we must ask : Was it not in some sense objectively real to Wordsworth ? Is it not (in that sense) real in that it stirs joy in the hearts of many who read the poem ?

I cannot here discuss the difficult problem of truth and error in their relation to reality. It must suffice to express the belief that both fall within reality in some comprehensive sense, or more specifically in our present context, that not only values, but unvalues also, are characters of natural events of which it may be said that their dependence on mind does not deprive them of their reality. This

does not imply that since both are objectively real our attitude towards them is the same. In some of us it is emergently different. Some of us have joy in the presence of instances of value, sorrow in the presence of instances of unvalue.

And so, it may be said, your doctrine is purely affectionist, or what is sometimes spoken of as merely emotional. Is that so? Let us try to envisage the doctrine as a whole.

The contention is that under emergent evolution in mental regard there is concurrent advance (1) in *reference* which is constitutive of all objective reality, (2) in *enjoyment* which passes from lower to higher forms which we have distinguished as pleasure and joy. The further contention is that, under the hypothesis of *concomitance*, this advance in mental regard is accompanied by advance in physical regard—say in transactions within the cortex of the brain. We seek, then, to contemplate the emergent outcome of this emergent process of evolution. We ask: Is it such as to lead us to infer with Huxley that rational order pervades the cosmos? Is it such as to lead us to infer substantial unity in progressive advance? If we reply in the affirmative it is surely on intellectual and not merely on emotional grounds. None the less progressive advance of the affective attitude is part and parcel of the outcome of emergent evolution. If in some persons there be a religious attitude towards the rational order, that order has for them spiritual value. For them it is not *only* rational order, but *also*, at this higher emergent level, Divine Purpose. The reality of Divine Purpose as objective is not *other than* but

emergently *more than* the reality of the rational order of the cosmos.

With regard, then, to objective reality we come down to this. Divine Purpose is objectively real in so far as it is possessed by mind. It is not other than the rational order of the cosmos. Hence it follows that only in so far as our concept of Divine Purpose in spiritual regard is accordant with (or in truth terms coherent with) rational order in scientific regard, can we accept both as part of our final synthesis. I submit that there need be no inconsistency in accepting both—of course on suitable terms. And for me these suitable terms require the rejection of new realism on the one hand, and the rejection of animism on the other hand.

New realists will reject my whole theory of reference, or at any rate my theory of reference as a whole. In its lower reaches (under cognitive reference) they will substitute in its stead something of the nature of a suitably elaborated sensum-theory. We have, however, seen that in its upper reach (under reflective reference) Mr Alexander does deal with values in terms of reference; for it is under reference that they are possessed by mind. But he rejects my theory of reference as a whole—that is, as applicable from bottom to top.

He rejects as we have seen (*supra*, p. 264) my theory of reference as applicable where the "object" in *his* new-realist sense of the word is "apprehended by mind," as contrasted with "possessed by mind." The difference in interpretation is cardinal. Hence I may be pardoned for repeating with emphasis that in my theory of reference there is nothing that

is "objective," in *my* sense of the word, that is *not* possessed by mind. And this applies just as much, in principle, to so-called knowledge by acquaintance, in cognitive apprehension, as to so-called knowledge by description, that is, under reflective reference. In other words, my contention is that *the whole story of knowledge, from first to last, is that of the emergent evolution of objective reference.*

But I urge that, supplementary to the attitude under which scientific knowledge is accepted subject to the canons of that which we deem cogent proof, there may be—so long as it entails no inconsistency—a further attitude of acceptance under what I have ventured to call "acknowledgment" (*E. E.*, § x). Let me restate the position.

We all reflectively start with a presupposition or assumption that the physical world is real in itself quite independently of our objective knowledge under reference. Some of us learn in due course that this has for centuries been subjected to "idealist" criticism. This criticism we weigh to the best of our ability; and if we pursue scientific inquiry we still act on our original assumption throughout this pursuit. Eventually we may reach the conclusions (1) that our initial presupposition is not susceptible of rigorous proof; (2) that idealist criticism is unable to disprove it; (3) that it is still open to us to accept physical reality under acknowledgment; and (4) that, on the basis of such acknowledgment, we may continue to prosecute our scientific inquiries. After questioning comes acknowledgment in the form of this kind of faith.

But some of us—I think the vast majority of us—

also start with a presupposition or assumption that a Being we are taught to name God is continuously active in guiding the course of events, much as men and women, children like ourselves, the dog and the cat, even birds, and fishes, and insects, perhaps, too, the bean-plant that breaks through the soil, guide the course of *some* events in pursuance of ends such as we set before us in our own acts. But here, too, some of us learn in due course that the assumption in such a crude form as this has again and again been subjected to " materialist " criticism. This criticism also we weigh to the best of our ability. And so long as we retain a religious attitude, we still act on what we deem essential in our original assumption, following the precept of that prince of critics, Descartes. And here, too, we may reach the conclusions (1) that our initial presupposition is not susceptible of rigorous proof; (2) that materialist criticism is unable to disprove it; (3) that it is open to us, without loss of consistency, to accept spiritual reality under acknowledgment; and (4) that, on the basis of such acknowledgment, we may continue to develop a schema that purports to be comprehensive. After questioning comes acknowledgment in this kind of faith.

§ 49. *The Spiritual and the Supernatural*

If, as I claim, there need be no discrepancy, inconsistency, or contradiction in the acceptance of emergent evolution and the acknowledgment of Divine Purpose, the same array of facts may be interpreted in terms of the most thorough-going naturalism and may also afford instances of Divine

Purpose. Let me put the matter in fashion of speech which, though it may need qualification, will at least be comprehensible.

According to emergent evolution we find and loyally accept a series of ascending steps in advance as we pass from natural entities of lower to those of higher status; and in the evolution of that which we deem the highest of natural entities, a man, these steps afford instances of a determinate plan which includes the evolutionary progress of all relevant events in him, alike in physical and in mental regard. But someone may say: There is yet another regard. What you regard as emergent steps in advance I, for my part, regard as miracles. Each miracle is new and unpredictable on the basis of the order of nature *as known up to date*. In this sense it cannot be other than an instance of supernatural intervention directive of the order of natural events. And what you regard as the comprehensive and determinate plan of events, I cannot but regard as Divine Purpose within which each several miracle has contributory place.

It seems, then, that the same array of facts may afford instances of determinate plan in naturalistic regard and of Divine Purpose in religious or spiritual regard. And if this be so there need not be any discrepancy. Naturalistic interpretation may be supplemented by spiritual explanation without any savour of contradiction.

I say that there *need be* no discrepancy, and that naturalistic interpretation *may be* supplemented by spiritual explanation. But here much turns on what we understand by "supernatural intervention."

If it imply ultimate and ineradicable dualism then I think we must say that any monistic interpretation, such as I advocate, cannot be other than false.

With respect to the concept of the supernatural there is a valid sense, though not the commonly accepted sense, in which on our principles we may speak of any newly emergent character as supernatural in that it is a step beyond that which is within the order of nature up to date. In this sense the advent of life, of reflective reference often identified with mind, of that which I distinguish as a spiritual attitude, are successive instances of the supernatural. But when they do come they are no longer *in this sense* supernatural. I have spoken of them as successively supervenient. Regarded as instances of Divine Purpose, I find difficulty in the concept of Divine *intervention*. For if *all* advance in nature be a manifestation of Divine Purpose, on what understanding can the Divine "intervene" at any stage of that manifestation?

This, however, does not touch the quick of what most people mean by the supernatural. The word commonly carries a different connotation. The implication here is that the natural and the supernatural belong to wholly diverse orders of being.

Again and again I have, in naturalistic context, repudiated dualism in all its forms. One order of reality has been the burden of my reiterated contention. But within one order of reality there cannot be two orders of reality—the one called natural and the other called supernatural. I must therefore state frankly that in rejecting dualism, even in our present context, I reject also what is

meant by the supernatural *in this sense.* There is for me (I must repeat) one and only one realm of reality that *is both natural and spiritual,* in ultimate unity of substance, but *is not both natural and supernatural* if this imply ultimate diversity of orders of being.

This may seem a hard saying; and it calls for a little expansion. The stress is on ultimate unity of substance as contrasted with ultimate diversity in order of being. By dualism I understand a doctrine that presupposes at the uncritical outset, and still acknowledges after deliberate weighing of relevant criticism, radical disparity of diverse realms of reality. The dualism may take on differences of form—not unfrequently a sundering of the realm of ethics from that of metaphysics. Thus it is said: "To attempt to mix up the two kinds of reality is to deny that the ethical fact, in which the religious view of the world has its root, is a separate thing not to be grasped in the general forms of being and becoming, and not within the view of metaphysics at all" (Herrmann). This may be, as Dean Inge says, "an astonishingly crude dualism," but it serves to illustrate what dualism, crude or subtle, stands for.

Such being the motif of dualism, by the supernatural I understand in this sense that which in some way characterises one of the two realms of being and does not characterise the other. On this understanding it is clear that in repudiating all forms of dualism I reject a separate realm of the supernatural. Herein lies my monistic creed, that, in so far as there is progress and advance in the cosmos, God is All in all but *in diverse modes and degrees of manifestation.*

Thus I come back to the contention that the rational order in nature, including human nature, is not other than Divine Purpose. It is in naturalistic regard that which is also, without shadow of dualistic sundering, Divine Purpose in spiritual regard. This rejection of supernatural dualism assuredly does not entail rejection of the spiritual. Nay rather it entails, for those who have reached the emergent level of religious regard, due recognition of spiritual unity in Ultimate Substance.

If there be one order of reality, it comprises within its substantial unity those "aspects" which fall under the headings "in physical regard," "in mental regard," and (for some of us) "in spiritual regard." But just as, for us, there are no mental events that are not also physical, and no physical events that are not *ex hypothesi* mental, so too for us there is no emergent step in human progress that is, in religious regard, other than contributory to Divine Purpose.

This implies the emergence of the religious attitude, that is, a *mental* attitude toward the acknowledged reality of Divine Purpose. It is this mental attitude that is in some persons emergent.

That which is objective to this mental attitude is dependent on mind. In this sense Divine Purpose is dependent on the mind to which it is objective. In this sense we may say: "Such as men themselves are, such will God appear to them to be" (John Smith, *circa* 1650). And in this sense the rational order of the cosmos, no less than Divine Purpose, is dependent on mind. But under acknowledgment we believe, though we are unable to prove to the

satisfaction of those who do not believe, (1) that the rational order has being independently of the reflective mind that is evolved within it, and (2) that Divine Purpose has being independently of the spiritual attitude through which it is revealed in this or that individualised person.

That the rational order is objective, as dependent on mind in reflective reference, may be otherwise expressed by saying that it is a concept. That we acknowledge its subsistence independently of mind may be otherwise expressed by saying that this concept has, if I may so put it, trans-objective reference to that which has being in its own right—"noumenal" being, as distinguished from "phenomenal" being.

The trouble is that, in the field of reflective thought, it is only through the phenomenal that we can approximate to the limiting noumenal. And, broadly speaking, a comprehensive view of the phenomenal is obtained only through a survey of the concrete instances recorded in history. Now in history—whether we take it as inclusive of all past events, or as restricted to human events, perhaps only to purposeful process—what we seek, but seldom get, is that which I have spoken of as a plain tale of these events. For I take it that when we deal with concrete instances of history—say human history—our aim is to describe, quite literally and without gloss, some plain-tale biography, let us say that of Abraham Lincoln, in its social setting.

But plain-tale biography—which includes all relevant mental events in enjoyment and with objective reference—is well-nigh, one may venture to say

quite, impossible. Moreover we cannot rest content with that which is given, so far as it is given, in plain tale. We want, or at any rate what we picturesquely call the artist within us wants, an interpretative story. We want it because it gives us æsthetic joy. Of all men the artist seeks that which affords such joy in himself and in the kindred of his type; for his joy is always communal. So we turn to the dramatist, let us say to Mr Drinkwater. What does he give us? He gives us, I think, a play that illustrates creative reality in the realm of art, subject to the canons of a distinctive order of coherence. And if someone say that here, there, or elsewhere his drama is not true to what may be gathered from plain-tale history, he might perhaps, were it worth while, reply: What of that? Drama is drama; and biography is, or should be, biography. My aim is to present dramatic truth with such measure of biographical truth as may subserve the purpose of art. If you cannot appreciate with joy this kind of truth created by man for kindred men, there we must leave it.

Created by man for kindred men—therein lies reality in the realm of art, therein lies æsthetic truth in the making. Even in "legitimate drama" literary art shakes itself free from the trammels of literal truth in biography. If this literal truth be "natural" there is a valid sense in which dramatic art is creative of "the supernatural."

But in a broad sense the method of *all* literary art is in some measure creative dramatisation. It may be creative of supernatural entities many and various. As creatures of poetic imagery they play the parts assigned to them. And the poet, as creative artist, is free to people his realm with as many entities as

he may deem requisite. But does he ask or expect us to accept his supernatural dramatisation as the literal biography of natural events ?

If, then, the realm of art—not only literary art but all art as " expressive "—is created by man for man that he may have joy therein, the question arises: Is the realm of religion in like manner a product of spiritual dramatisation, having reality only in the realm of religious artistry ? If so, as such, it is not concerned with any other reality than this. But under acknowledgment Divine Purpose is not only a figment of man's creative imagination. It has other reality than this.

§ 50. *God as Spiritual Substance*

The net result of the considerations adduced in the foregoing section is that the prefix " super " and the word " beyond " may from the point of view of emergent evolution be applied to any stage of emergence as contrasted with the precedent stage. The molecular stage is super-atomic ; the crystal or colloidal stage is super-molecular ; and so on throughout the whole gamut till we reach the æsthetic or the ethical stage as super-cosmic (in Huxley's sense) and the stage of spiritual outlook as super-æsthetic and super-ethical. But all stages fall within the rational order of the cosmos in our comprehensive sense ; and for us this rational order is, in spiritual regard, not other than Divine Purpose. For us, Divine Purpose is inclusive of *all advance* — physical, vital, mental, social, and in spiritual regard. Could we but reach the acknowledged limit there would be no " super " beyond it.

It follows that for us there is in spiritual regard nothing super-rational in this sense. But in what I venture to call the evolutionary or the emergent sense, it is our cardinal claim that such is the super-status of the Holy. And here I call Dr Rudolf Otto as a witness to its presence at the "numinous" stage of human development.

If, as he does, we restrict the range of application of the word "rational" to what I have spoken of as the reflective level of mental development, we have, as I think, in our reflective attitude towards intellectual truth value, the distinctively rational attitude. But we have also at this level the no less distinctive attitudes towards æsthetic value and ethical value. And *at this level* we have no more. Under differing terminology Dr Otto and I both claim, if I mistake not, that spiritual value is on a higher plane. If I urge that rational truth value, æsthetic value, and ethical value are on the lines of emergent advance towards something higher, namely spiritual value, would he meet this by uncompromising denial?

It may be said that in his arresting work on *The Idea of the Holy*, there is abundant evidence that he would and that he does. Again and again he contrasts his method of treatment with that which he ascribes to evolutionists (*cf.* pp. 44, 71, 169). But is not the concept of evolution which he combats—in brief evolution *without* emergence in my sense—just that which I, too, can no longer accept? When, however, he says, that "the history of humanity begins with man, and we have to presuppose man, to take him for granted as he is, in order that from him we may understand his history" (p. 118)—when he deals with the *a priori* category

and the like—he excludes man from emergent evolution (in my sense) and uses the words " emergent " and " evolution " in the sense of the unfolding and rendering explicit of that which is already in being as enfolded and implicit. And yet, even here, may we not find some common ground? For I, too, am now concerned to urge that what in naturalistic regard is " epigenetic " emergence is from first to last the temporal unfolding of Divine Purpose in which there is no first nor last since it Is.

In Divine Purpose as I conceive it—Dr Otto may say under " rational schematisation " and with the aid of " ideograms "—quite central and essential is Substantial Unity. It is here, as elsewhere, that I am monistic to the core. For if there be any validity in my concept of substance, it entails the renunciation *au fond* of all radical dualism or pluralism. These concepts lend themselves, no doubt, to dramatic mythology. But this, in my judgment, is the dross to be smelted out as we get nearer and nearer to the pure gold of a spiritual and not merely a spiritist religion.

It is, I suppose, unnecessary that I should show in detail how the concept of substantial unity that runs through my evolutionary treatment may here take higher form in spiritual regard. But when I say that in this regard God is Spiritual Substance, it will no doubt be said that I leap from the impersonality of Divine Purpose to the personality of God.

With the concept of God as personal most of us have started in our early years as an initial assumption. For many of us there has followed careful weighing of relevant criticism. Some of us still accept Divine Personality under acknowledgment.

But it does not follow that the concept under acknowledgment is in all respects the same as the earlier concept under initial assumption. Is the concept of the physical world, which the man of science bids us accept, just the same as that of the boy when first he enters the laboratory ?

In facing current criticism of Divine Personality many of us have found that much of this criticism is, as we think, irrelevant, since it accepts a " plain common-sense " definition of personality—perhaps subject to legal convention—which further inquiry has led us to reject. It is a philosophical inquiry full of difficulties. And, as far as I can see, so long as we regard personality as synonymous with individuality, these difficulties are insuperable.

I can here but barely indicate a position which needs much fuller and more adequate discussion. But the sand in the hour-glass is running out. A brief and summary statement must suffice.

That which is individual is unshareable. Of each self, as individual self of enjoyment, we may say with Professor Pringle Pattison that it is " a unique existence which is perfectly impervious to other selves." But this is just what we cannot say of each self as a person. Of course I am only presenting a point of view permissible, as I think, where the meaning of the word " person " is so beclouded with ambiguity (*cf.* Dean Inge, *Personal Idealism and Mysticism*, pp. 23–27, and Lecture IV). From that point of view, even at the reflective level, the rational person, the æsthetic person, the ethical person, does unquestionably share with others a common attitude towards values that are no less objectively common. It is through this sharing—

this intimate partaking—that, in the course of emergent evolution, personality is supervenient on individuality. Individuality with its inherent selfishness is not lost; but personality is in some measure gained. In a person the "type"—the golfer, the art critic, the man of science, still more comprehensively man as man—is incorporate.

Now values are possessed by mind. Only as possessed by mind have these specific forms of reality existence or subsistence. But possession by mind implies for Mr Alexander, "combination of mind with its object" or, in my phraseology, co-presence of enjoyment with reflective reference. Enjoyment is purely individual; and yet even this enjoyment in presence of value is, as Mr Alexander insists, more than individual; it is communal. Reference is no less individual; and yet it, too, is more than individual; it is social and hence, as I think, so far personal. Individuality and personality, as limiting concepts, are poles asunder. At the one pole is absolute uniqueness; at the other pole the universal feature that characterises the type. Each of us is bi-polar, swinging somewhere between these extremes. To paraphrase what Mr Bertrand Russell has said of literature. A person embodies what is general in particular circumstances. The universal significance of his personality shines through his unique individuality.

How comes it, then, that our individual enjoyment is also personal, that our individual reference is shared by many persons? In evolutionary regard it just is so. We accept what we find "in natural piety." But if we regard the whole evolutionary process as a manifestation of Divine Purpose, it is

in us as persons that Divine Personality is revealed. Through expansion of thought in spiritual regard we reach out towards, though we are unable to grasp, the limiting concept of personality. If we be persons and more than individual selves, it is in religious regard through the all-embracing Personality of God.

Revert to possession by mind. Truth, beauty, and goodness are possessed by each individual self of enjoyment as the centre from which reference goes forth. But when they are not *thus* possessed in some temporal sequence of mental processes—mine, yours, or another's—do they surcease and drop out of being? Perhaps so. But may they not be temporal manifestations of values *which in spiritual regard are eternal*? In the attitude of acknowledgment I believe that they *are* so. The "are" is comprehensive at the unattainable limit of the timeless. And the Timeless and Eternal is the I AM towards which we reach out in spiritual regard. Thus truth, beauty, and goodness—rational, æsthetic, and ethical values—are raised to a higher status for those in whom the spiritual attitude is supervenient, since they have their ultimate being in God.

I have harped again and again on a spiritual attitude, emergent in some persons; and I have passed on from Divine Purpose to God as the Being of whom the religious person has "vision" in spiritual regard. Even for him, however, God is an object for contemplation only in the same sense as is a personal self in social regard. In other words, what is objective is a *concept* of God—under "ideogram," as Dr Otto puts it.

But the self that one *is*, in its individual uniqueness and in its representative personality, is the self

of enjoyment. Here and here only we realise self in the current nature of its being. On the self of enjoyment, realised in its substantial unity, all reference to, and reflective knowledge of, a self for contemplation is founded. We must ask, then: How is the Being of God realised in the passing "here" and "now" of current religious experience? To this question must not each one of us reply: It is (or is not) realised in my self of enjoyment—there and at first hand nowhere else? Primarily the Kingdom of God is within us; not as something other than what one is as mortal man—not as restricted to the individual—but as constitutive of what some persons *are* as passing manifestations of life and of mind through the presence within them of the Eternal and Omnipresent Spirit.

It is hard to put into suitable words what one seeks to express. But is not this the difficulty that faces us with regard to all modes of enjoyment? Can we define them? Of any episode in enjoyment can we say much more than: It feels like what it feels like when it feels like *that?* The "that" is here a kind of spiritual joy which some of us feel, and others assure us that they do not. It is only here that we realise in particular instances of enjoyment that which "Shines through their individual dress." But here, more than elsewhere, we dimly or clearly realise that love is Love writ small.

I know full well that, with respect to much that I have said in this lecture, I shall be charged with mysticism. So be it. In discussing emergent evolution I was faced by problems many and various. In spiritual regard I am faced by mystery. And in presence of mystery, the spiritual attitude, if

monistic, cannot as I think be other than mystic. That is part of its emergent character ; to be emergent in some human persons falls within Divine Purpose. Christianity without any touch of chastened mysticism is not that which I find—and I must speak as I find—in the New Testament or in the teaching of the Church of which I am an unworthy member. If it savour of mysticism to say that Divine Personality shines through the Unique Individuality of the Christ, are not all who subscribe to a Logos doctrine mystics ?

But such mysticism does not preclude full recognition of all that is ancillary to Religion. Without unduly pressing the analogy, I should say that as in poetry I find truth to which literal truth is ancillary, so too in Christianity I find truth to which all worthy art is ancillary—truth that in and through mystical insight, and only thus, touches the eternal verities of a spiritual religion. Not only in us is Divine Purpose revealed, but in God we realise the mystery of our being. In our passing life we touch the fringe of immortality when we acknowledge God as Ultimate Substance.

And so, having as mere philosophical layman led the way, perhaps too devious a way, to what I conceive to be the open door of the cathedral of Christianity, my task, as Gifford Lecturer, is accomplished. It is not for me to conduct the service, only to join in the worship. Not mine the privilege

> " to take the Prior's pulpit-place,
> Interpret God to all of you."

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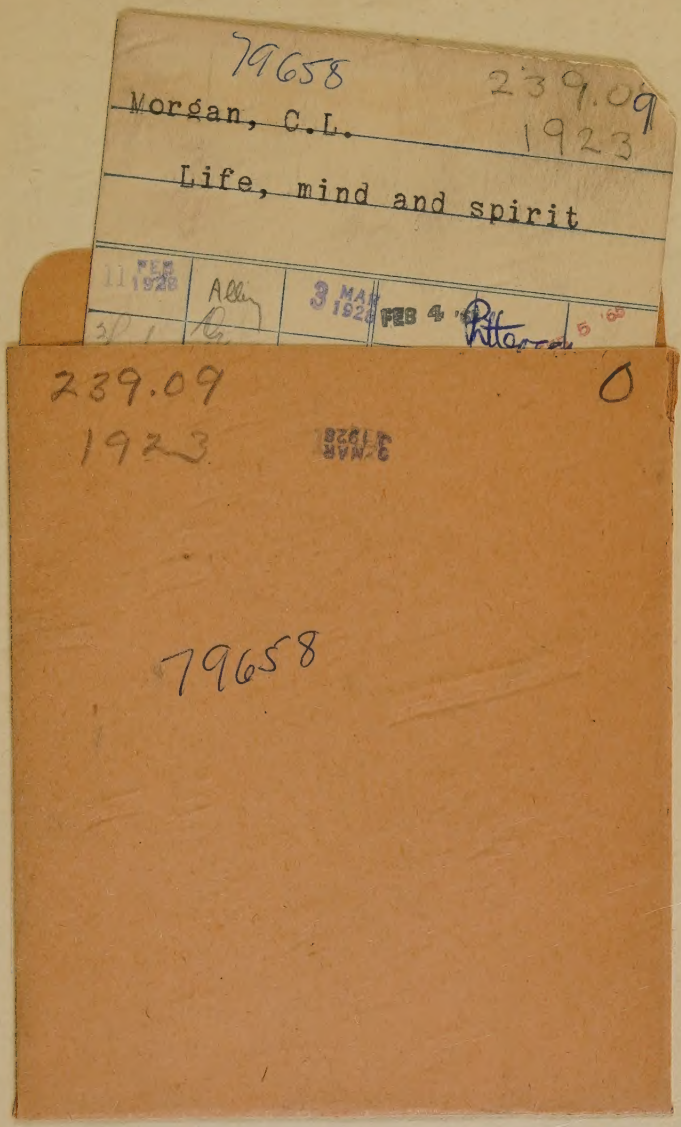
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